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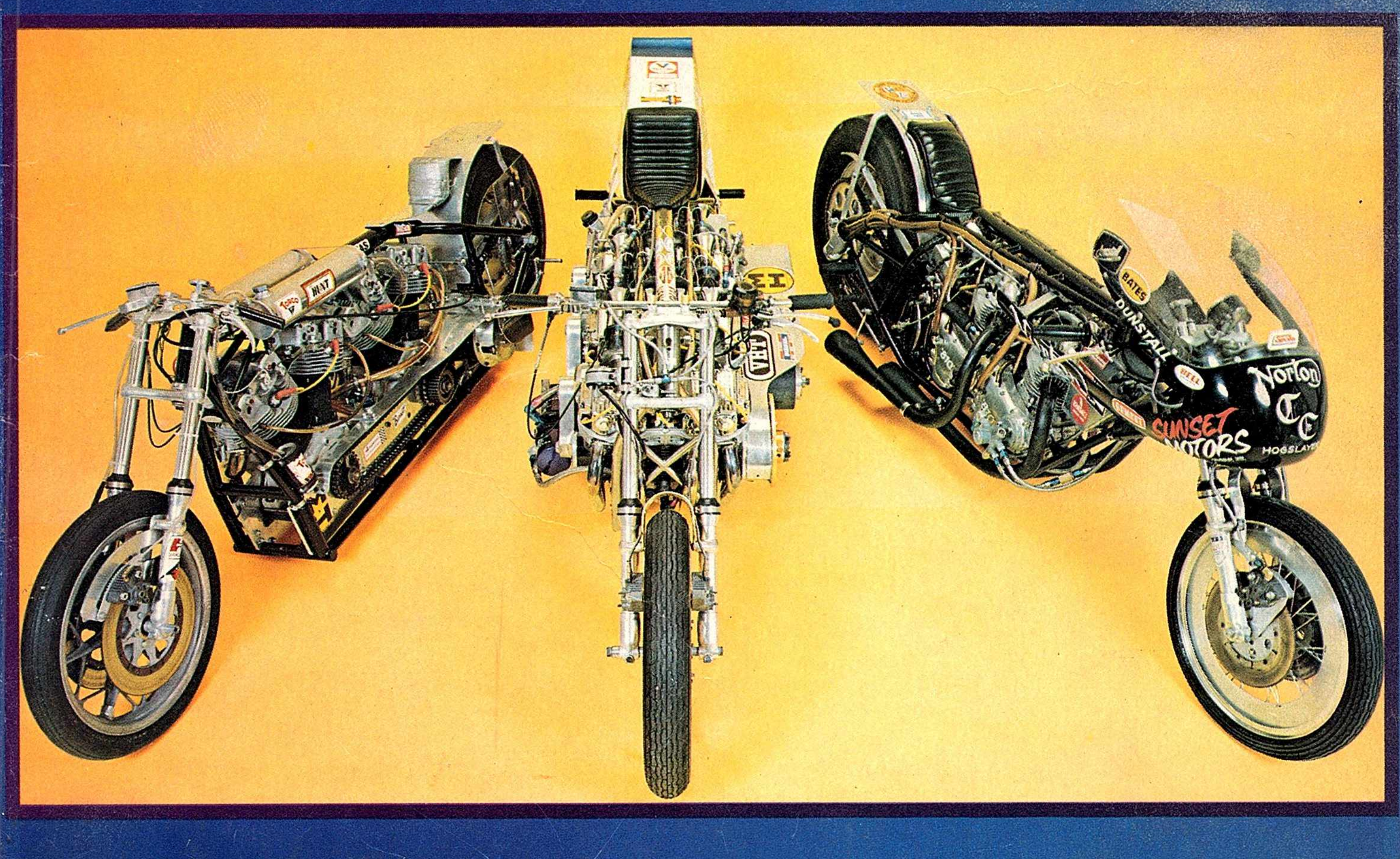

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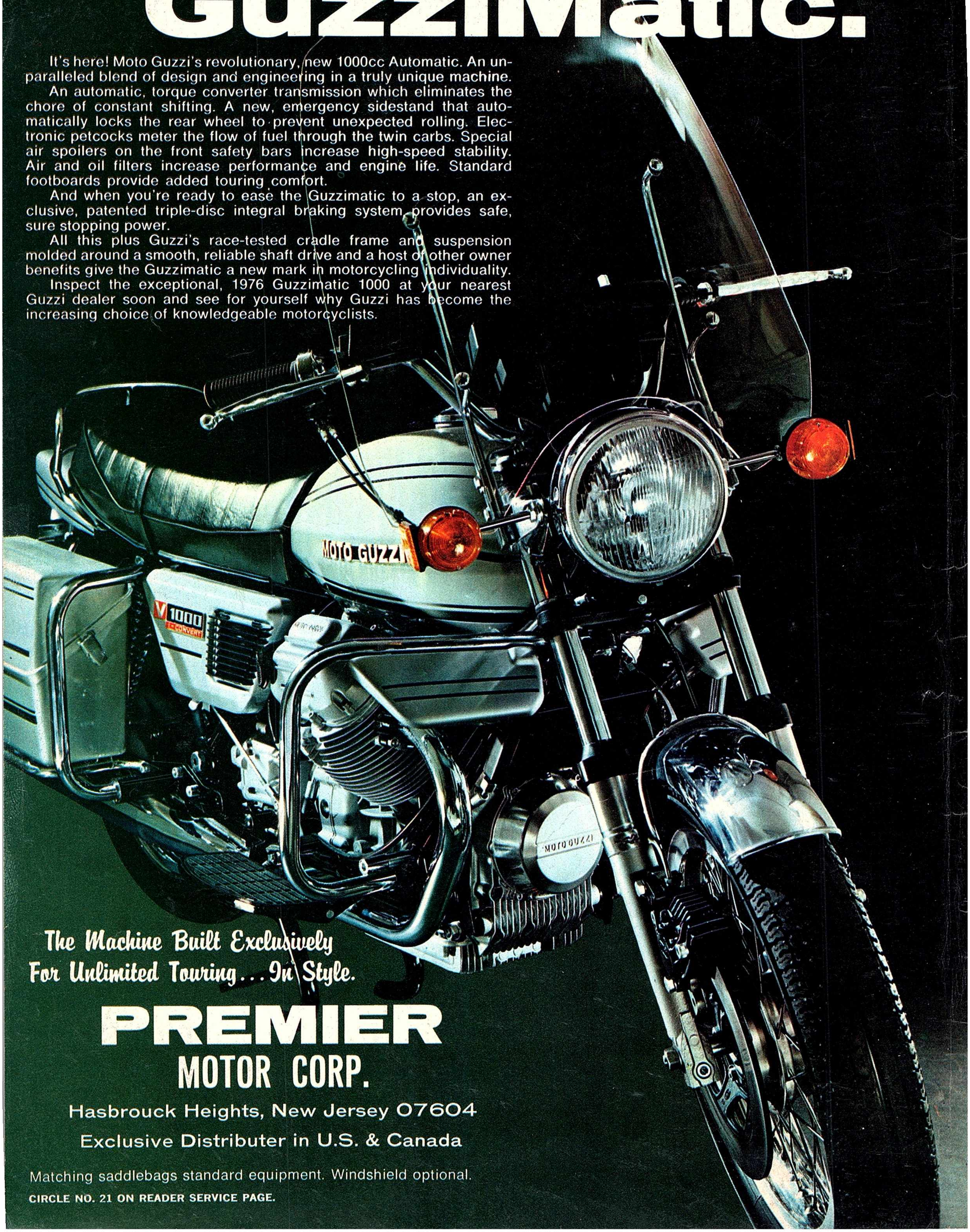

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February 1976 Volume XXVII No. 2

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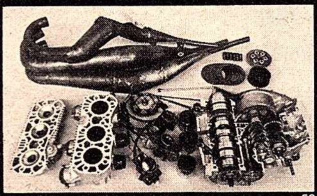

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This Month's Cover: Three bikes, seven engines, and 900 horsepower—that's the substance of the machinery Larry Willett was asked to photograph for *Cycle's* February cover. To assemble that much power any other way would have taken ten Honda GL-1000s, 12 Kawasaki Z-1s, 45 Suzuki 125 MXers or 90 Honda CB-125s.

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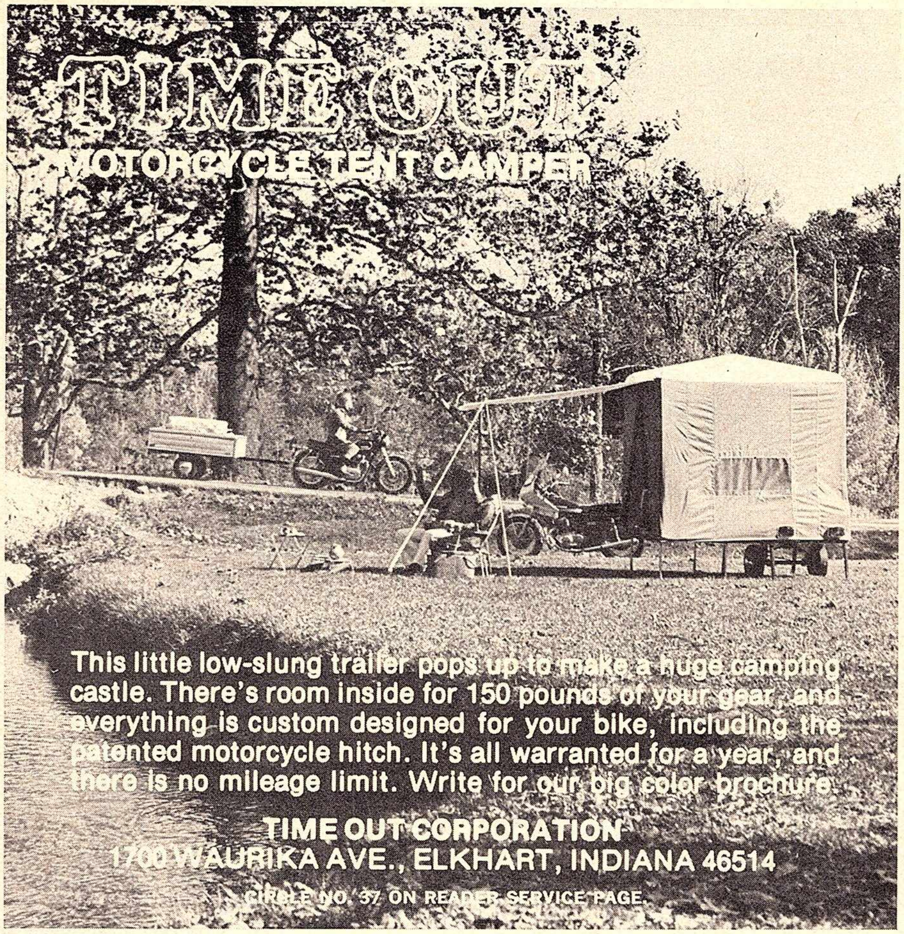

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# THE HONDA REPORT

February, 1976 HR #26

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## Baker & Honda Win SCORE's Overall Points Championship.

Riding a dealer-modified Honda XL-350, veteran desert rider Al Baker won his class and the overall SCORE points championship for 1975, according to that major sanctioning body of off-road racing. This year's events included the brutal Baja 1000 and Baja Internacionale 500, the Parker 400 in Arizona, and the World Championship of Off-Road Racing held in Riverside, California. Beating world-famous riders and drivers of 14 classes of machines, Baker also becomes the highest money-winner in SCORE history. Strength, power and, most of all, dependability were the Honda qualities that helped Baker win. And Honda builds those qualities into the bikes you can buy. See them at your Honda dealer.

## Motorcycle Educational Loan Program Begun by Honda.

Many Honda dealerships are now part of an important new program to help make loan motorcycles available to local schools for educational purposes. It's called the *Honda Motorcycle Educational Loan Program*. Participating Honda dealers furnish up to eight CB-125S models for a six-month period. Also, in order to make the move from the classroom to the street even easier, some Honda dealers will be providing the use of their Test Track™ motorcycle riding simulators. The *Honda Motorcycle Educational Loan Program* is another example of Honda's commitment to motorcycle safety and rider education.

## Honda Generator Helps Doctors in Mexican Town.

In the middle of desolate Baja California, Mexico, far from most modern conveniences, is a little village called San Telmo. Thanks to a group of volunteer American medical professionals and small-aircraft owners named the Flying Samaritans, the villagers are given medical attention every month, free of charge, in a five-room adobe clinic. Until recently, the clinic was lit and heated by sunlight. Now, with the use of a Honda E-1500 portable generator, the clinic has a source of power the people and the volunteer dentists, doctors, nurses and pharmacists can count on. Day or night. Regardless of season.

## Introducing New Touring Gloves from Honda.

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Racing may void some Honda warranties.

CIRCLE NO. 32 ON READER SERVICE PAGE.

# Editorial

## Racing

● As *Cycle* mentioned last month, Yamaha won't have Suzuki and Kawasaki to kick around Daytona any more, since both factories recently announced an end to their official involvements in AMA Championship road racing. Suzuki has been going big-bore racing since the introduction of their Titan 500 air-cooled twin, and Kawasaki since 1970, when they showed up in Florida with worksy-looking 500 triples. Both factories have given AMA racing their full support, and both have come away from it with some success—Suzuki picked off four Nationals and Kawasaki seven, none of which, unhappily, was Daytona, the winning of which can make a season, or a career. Still, the two of them raced hard, spent hard, tried hard—and by so doing had a profound influence on the advancement of American racing, and racers.

Why do factories race, anyway? Do they look upon a track through mountain climber's eyes and take a ram at it because it's there? Are their efforts fueled coldly by projected commercial benefits they imagine to march in lock-step with racing success? Do they subject modified versions of what they produce to the rigors of the race track in order to improve the bike they sell to the street-ridin' buyer?

There are different answers for different factories, of course. One senses that in the cases of Suzuki and Kawasaki, racing programs were undertaken to more firmly establish their legitimacy. If they were to whip Harley-Davidson or Triumph at Daytona (or anywhere else), then in the minds of potential customers, they would be more clearly identified as serious manufacturers of serious motorcycles. Ultimately, both factories, having become major forces in the American marketplace, continued to race, despite their credentials—which doesn't mean the primary rationale was wrong, but rather that the rationale had to be changed to fit new circumstances. They were both solidly established as builders of motorcycles; it subsequently became important that their motorcycles were generally acknowledged to be good ones, which racing success would surely point out.

BMW in recent years has undertaken a modest Class C involvement, and a less-modest Production racing involvement. BMW's reasoning was clear and straightforward: we are changing our image, BMW said. We are offering motorcycles in colors other than black; we are offering motorcycles in displacements other than 500 and 600 and 750. We do not want to continue being known as a manufacturer of old man's motorcycles. What better way to change one's image from staunch conservatism to enlightened conservatism than to spread some noisy hydrocarbons around a race track, and kick a few tails in the process? What better way indeed.

An argument could be made on behalf of demonstrating the prowess of a specific new model by racing it. Honda introduced the CB-750 Four in 1969 and raced several versions of that worthy at Daytona in 1970, one of which was lucky enough, fast enough and tough enough to win. Having got exactly what it came for, Honda Ltd. packed up its weaponry (presumably in magnesium and titanium crates) and was never seen at full force on an American road race track again. Their justification for coming was to reinforce the appeal of a relatively brand new motorcycle; their justification for leaving was that they had done just that, and saw no reason for persisting.

You will no doubt notice that racing as discussed above is consistently rationalized by its commercial value; Harley-Davidson needs no such excuse. H-D races because . . . H-D has always raced, and because H-D enjoys it, and because H-D is good at it. For the Milwaukee crowd competition has historically supplied its own magical momentum: if there is racing to be done, then H-D races. It's as simple as that. Harley-Davidson people will tell you that their dealers expect them to race, they will tell you that racing puts a fine edge on their over-the-counter motorcycles and accessories, they will tell you that certain loyalties are strengthened by racing—but at the middle of their ongoing and quite expensive competition effort lies a deep and reflexive devotion. When their flathead 750s were king H-D offered up extravagant pavement teams; when the flathead died Dick O'Brien and crew tried for two years to keep the iron-head XR from melting; and while they were doing that they were refining a brand new, for-racing-only alloy overhead twin. By the time the new XR-750 was capable of producing consistent dirt-track wins, it had been passed by as a pavement threat—so H-D simply brought over their Italian subsidiary's 500cc two-stroke twin, and had at 'em with that. One gets the feeling that if H-D were reduced to Toppers, then they'd race Toppers. Because racing is what H-D does, and that is all there is to it.

Yamaha is much the same way: Yamaha races. Period. Yamaha in fact has created road racing as we know it today, and whether or not you see today's racing as a good thing, it is almost exclusively a Yamaha product. Certainly not everyone road races a Yamaha. But with very few exceptions, everyone who races well learned on a Yamaha—just like everyone who races less than well. MV Agusta is cast from the same mold. For money, MV builds helicopters. For sport, MV goes racing. For money, H-D and Yamaha build motorcycles. For sport, they go racing. The connection between MV's helicopters and MV's race bikes is the same as the connection between the H-D and Yamaha street bikes and the H-D and Yamaha race bikes: supportive, geographical, but otherwise imaginary.

When factories elect to go racing, they seem to do so only when certain conditions prevail. Condition the first: the factory is in good shape, and so is the market the factory serves. Condition the second: the factory has to hand something that can race competitively, something that can be converted into something that can race competitively, or someone who can build something that can race competitively. Suzuki had to hand the 500cc Titan twin; Kawasaki had the 500cc triple; Yamaha had the bones of a 350 race twin buried in the flesh of the YR-1.

The conditions are important ones to remember, especially if you agree with the hypothesis that, sales rationales aside, racing on a Big Time scale is diversionary and expensive beyond imagining. If it were true that racing helped sales, one would assume that in a tender market the factories would be racing like crazy. What we have in this country now, and have had for the better part of a year and a half, is a tender market; yet two of those factories to whom racing is an elective are pulling out.

*(Continued on page 102)*

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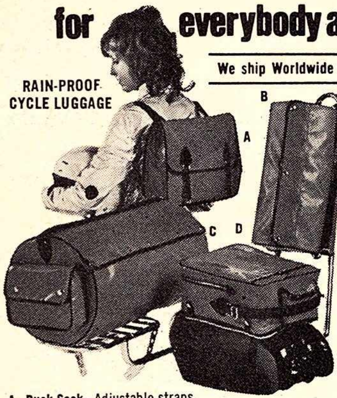

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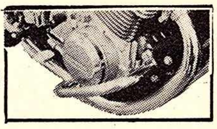

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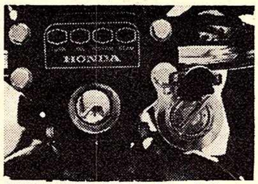

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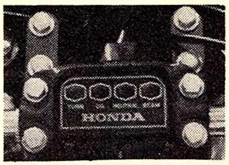

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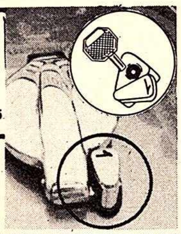

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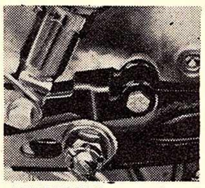

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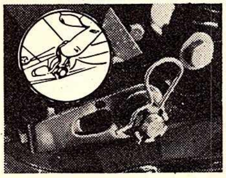

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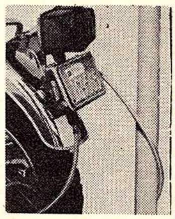

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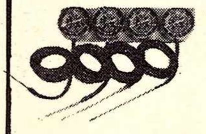

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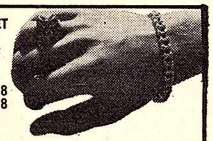

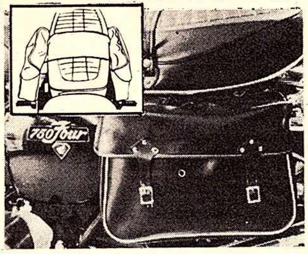

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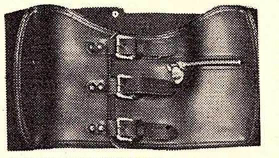

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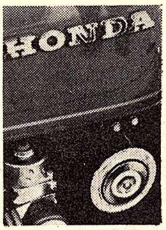

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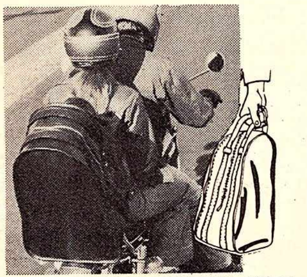

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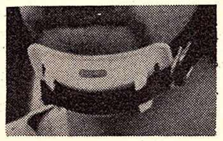

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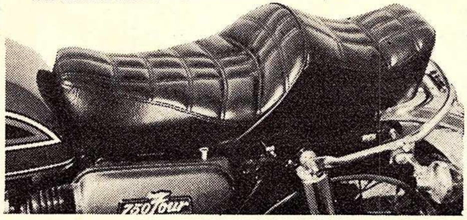

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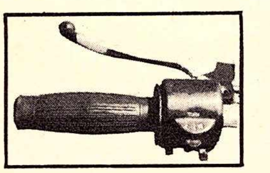

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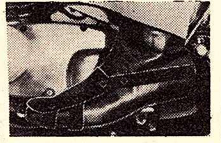

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CIRCLE NO. 27 ON READER SERVICE PAGE.

# Letters

## Calculating Readers

I just read in the Letters column of the December issue of *Cycle* about Brian McKenna from Topeka, Kansas, having 97,772.7 miles on a 1975 H.D.

My calculator says this is an average of 267.8 miles per day, 365 days a year.

I can understand brand loyalty but at least keep the figures within reason.

Donald Hemingway
Leominster, Massachusetts

These figures would have to substantiate a claim to the "Rider of the World" award if there is such a thing. His yearly riding average with both Hogs would be 40,617 miles with an overall monthly average of 3,384 miles.

I must admit that his 1975 average of 8,147 miles a month would have to set Mr. McKenna up as "Super Rider of the World" and really overshadows his 36-year average of the 3,384 miles per month.

It would undoubtedly be a test to check figures on letters but in order to preserve the integrity of your fine magazine it probably should be done.

Stew McLeod
Burnsville, Minnesota

A 1975 Hog with 97,772.7 miles?—be realistic! At a sustained 50 mph it would require approximately 2000 hours to obtain that sort of mileage.

When you add to that such trivia as time required for refueling, maintenance, stop lights, city driving, etc., the figure would be well in excess of 3000 hours.

There are 8,760 hours per year; about 2,920 are used for sleeping; an average of 2000 hours are spent on the job; and another 730 hours per year are spent eating. This totals to 8,650 hours, which leaves Brian 110 hours per year for other activities such as brushing his teeth, bathing, dressing, reading *Cycle* & the like! Seems as though this boy doesn't have much spare time.

97,772.7 miles on a '75 Hog—possible, but it sounds more like the babbling of an 8-year-old with a mini-bike, a small back yard, and a big imagination.

Blase Brunner
Port Murray, New Jersey

I just read Brian McKenna's report (Cycle Letters, Dec. 1975) on the longevity of his two Harley-Davidsons. I'm not too surprised at his assertion of having ridden 1.3 million miles on the 1939 model and another ninety-seven thousand miles on the 1975 model. After all, for many years Harley oldtimers have been telling us their machines can accomplish splendid feats. However, I stand in awe of Mr. McKenna's longevity. A quick back-of-the-envelope calculation tells me that he has averaged 103 miles per day each and every day for the last 36 years. Even more significant is his 275 mile per day average on the 1975 machine. Please, *Cycle,* how about arranging for a road test of McKenna's posterior anatomy? A lot of us younger whippersnappers would dearly love to know how he does it.

Ron Graham
Richland, Washington

I thought that fishermen had the lie department tied up. Well, this dude McKenna from Topeka, Kansas has just taken the market from the fishermen and given it to the HD owners (and ruined their credibility?). OR he is the jamminest, scootinest biker of all times. To obtain 97,772.7 miles on his 1975 HD, and presuming he has owned it for one year, he would have to have been on that scoot for 267.9 miles each day. All this on a HD to boot? Brian should be ready for a spine and nerve transplant by now.

T. W. Abbott
Aurora, Colorado

Not counting the 1975 H.D. with 97,772.7 miles and the 365 days of ownership, that is an average of 41,778.5 miles per year every year for 35 years.

What does Mr. Brian McKenna of Topeka, Kansas do for a living and at 97,772.7 miles in the last 12 months, how does he like retirement?

Also, who does his engine rebuilding and what are his views on people who are fuelish?

Terry Herr
South Haven, Michigan

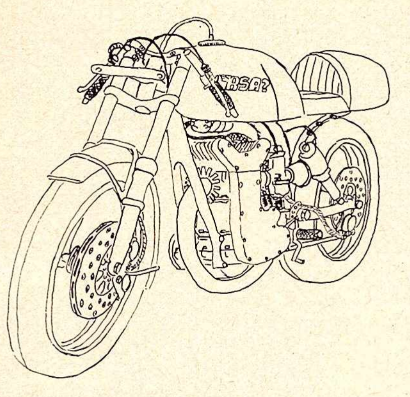
### PICKY

I'd like to make two comments on your road test of the BMW R-75 in the November issue of *Cycle.* 1) Many, if not most, people bang their shins on the BMW's air intake tubes. However, one quickly—occasionally painfully—learns to avoid them so well that it becomes an unconscious habit: I haven't banged my shins on my BM for the last 54,000 miles. 2) In regard to your comments on the finger motion required to operate the turn signals and headlight dimmer: you have got to be crazy! With all the talk of "human engineering" going around the last few years about how to adapt machines to the human body, you ask the engineers to adapt us to the machines. Perhaps your tester does not have opposable thumbs. At any rate, "wiggle" your thumb back and forth, and compare the ease of that motion in relation to the difficulty involved in trying to slide a switch back and forth along a line at a 90° tangent to the other fingers. The relative ease of either motion is not too different, but all you have to do with BMW's design is take a swipe with your thumb, rather than feel out the switch's location and then either push or pull on it. Too much wasted time, motion, and concentration in what you propose.

Sorry to pick nits, but, remember, you did it first.

Ron Sherer-Davis
Montclair, California

*Address all correspondence to: Cook Neilson, "Letters," CYCLE Magazine, 780-A Lakefield Road, Westlake Village, California 91361.*



O.K., Daughty, you're on. The Middle Southern California Bench Racers accept your challenge, and hereby unveil the ultimate thumper, suitable for demolishing TZ-750s and 8 cylinder Can-Ams. The engine is a water-cooled, short stroke, DOHC, four-valve 750cc single. Pointless light-triggered ignition (*a la* Mallory), gear-driven camshafts, primary drive and Yamabalancer (to keep the pilot from vibrating off) are its technicals. 110–130 bhp at 12,000 Rs (the Formula One boys are getting comparable horsepower from engines of similar concept) is adequate to propel its 260 lb. mass to competitive speeds. (A simple four cylinder TZ Yamaha weighs 370 lbs. How much would an eight cylinder rotary valve bike weigh? The single would be forty pounds lighter in the exhaust system alone). The chassis has one large oil-carrying backbone and a single disc at each end; the rear is a conventional type, and the front is ventilated with a four-puck caliper. Rear suspension is by compressed air for spring rate adjustability; shock mounts alternate from near-vertical to 45° cantilever and allow ride height and wheel travel adjustability (as well as changes in rake/trail at the front). The radiator is behind the engine offset to the right (the carb is offset to the left), and the fairing provides ducting, so the portion of the fairing doing the penetrating of the air is as narrow as possible for maximum slipperiness.

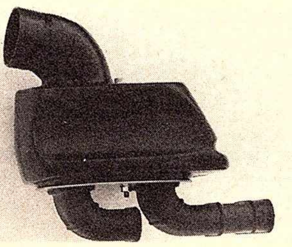
The bike is not the overdog that the 8 cylinder Can-Am is, but my BSA? is a total concept; the chassis is as important as the engine. The bike isn't a world beater, but a viable underdog. What do you say Daughty, how about Loudon?

Jim Sylvester

# Newsline

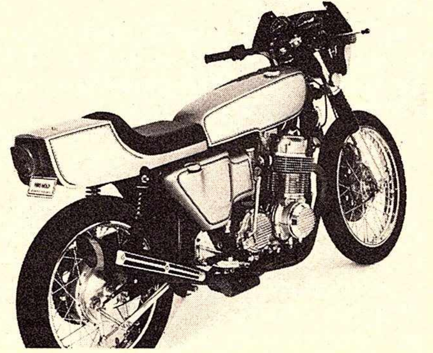
## On The Christmas Rebound

Elsinore Air Box: Performance modifications to Honda's CR125 and MR175 engines require improved intake breathing to produce desired power increases. Al Baker has developed a special, flow-tested air box for the two Hondas that is designed to deliver minimal intake flow resistance and accommodate 30, 32 or 34mm carburetors. The air box body is made of hand-formed fiberglass and includes a K&N filter. Air is drawn in through a pair of pre-formed rubber snouts which prevent induction of water below the height of the seat base. Weight of the complete assembly is three pounds and installation is a simple remove-and-replace project. Suggested list is $49.95 plus shipping from Al Baker R&D, 15174 Raymer St., Van Nuys, CA. 91405.



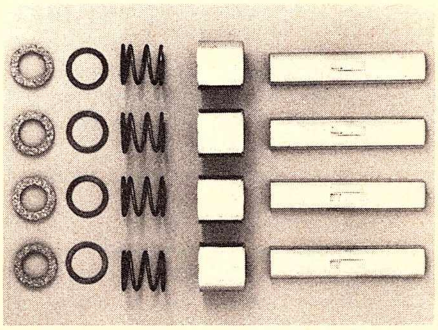
**CIRCLE NO. 1 READERS SERVICE PAGE**

Cafe Components: Unique cafe racer-type components are the specialty of Fibre-Mold. Much of their styling designs follow the lines used by the Honda GP road racers of the Sixties. Special bolt on components include the 3¼ gallon gas tank, seat/tail assembly, side covers and mini-fairing. Prices on these components are $95.00 for the tank; $135.00 for the seat/tail assembly; $80.00 for the side covers; $60.00 for the mini-fairing. Available from Fibre-Mold, 921 N. Birmingham, Tulsa, OK. 74110.



**CIRCLE NO. 2 READERS SERVICE PAGE**

H-D Custom Push Rod Covers: Here are decorative chrome parts for the Harley-Davidson touring rider or custom enthusiast. Colony Machine & Tool is making three custom pushrod cover kits for Harley-Davidson Big Twins and Sportsters as replacement components for the stock assemblies. Each kit contains proper length chrome plated pushrod covers, cups, cork gaskets, steel washers and springs. Suggested list is $16.00 per kit. Identify model and year of machine. Available from Colony Machine & Tool, 1300 Industrial Parkway North, Brunswick, OH. 44212.



**CIRCLE NO. 3 READERS SERVICE PAGE**

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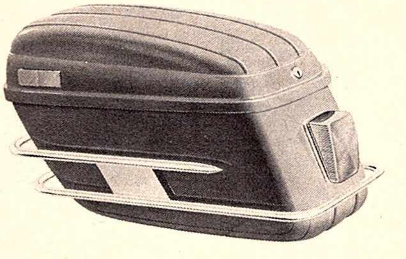
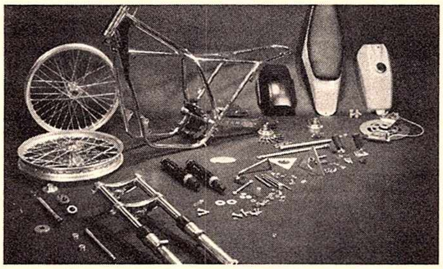


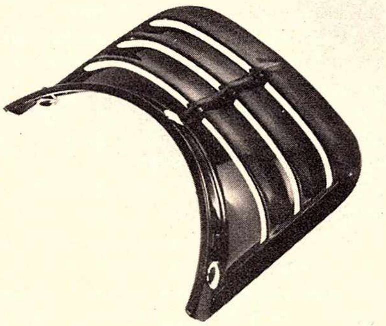
**CIRCLE NO. 4 READERS SERVICE PAGE**

Honda XL Chassis Kit: Honda's four-stroke, four-valve singles are superb engines but the stock XL chassis' leave much to be desired. Trail riders or dirt racers wishing competition-level handling for their XL 250 or 350 Honda can build their own off-road special around Rocky Cycle's chassis kit. This complete kit includes a Champion frame and swing arm, Betor fork assembly, S&W shocks and springs, Cycle Craft plastic seat and tank, spool hubs and alloy rims, disc brakes, and all the other necessary hardware. Assembled chassis specifications are: 55- to 56-inch wheelbase, 12¼-inch peg height, 9½-inch travel. Pricing of the kit and individual components available from Rocky Cycle, 1250 Elko Dr., Sunnyvale, CA. 94086.



**CIRCLE NO. 5 READERS SERVICE PAGE**

Spoiler Visor: Most off-road riders and racers prefer long bill visors for sun shade protection. Gold Belt has developed an effective solution to high-speed visor lift by venting the Spoiler with louvers. These louvers allow air to pass through the louvers and the Spoiler snaps to any helmet with front visor fasteners. We tested the Spoiler in the Baja 1000 and found it eliminated most wind lift problems common with long-bill visors. Available in orange, yellow, blue, black and white. Suggested list is $3.95. Information available from Simon Says, 8568 Melrose, Los Angeles, CA. 90069. ◉



**CIRCLE NO. 6 READERS SERVICE PAGE**

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El Segundo, California interpart

CIRCLE NO. 34 ON READER SERVICE PAGE.

# Drags, The English Heartland

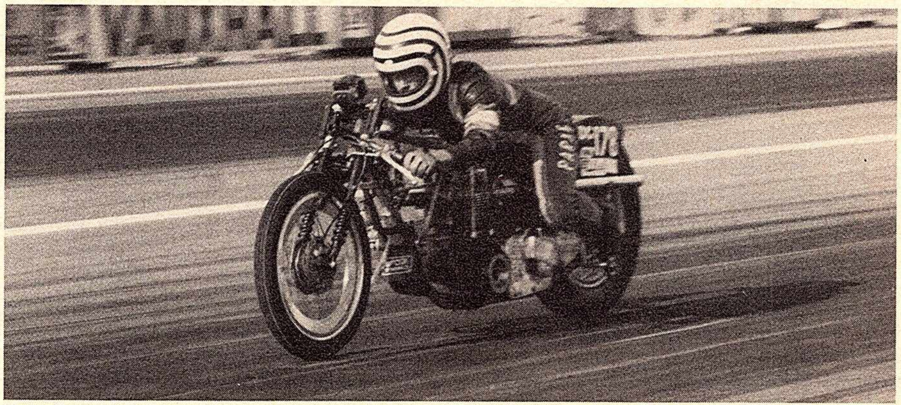
● Santa Pod, despite the exotic implication, is a drag strip located in the mid-English flatlands where the late afternoon wind invariably conveys a chilling message, and the cacophony of drag racing disperses over an unusually lightly-populated countryside. The "Welcome to Santa Pod" signs stand sentinel over a pig farm. The gateway opens to a badly deteriorated concrete road, of WWII military airfield origin, bisecting fields normally inhabited only by sheep.

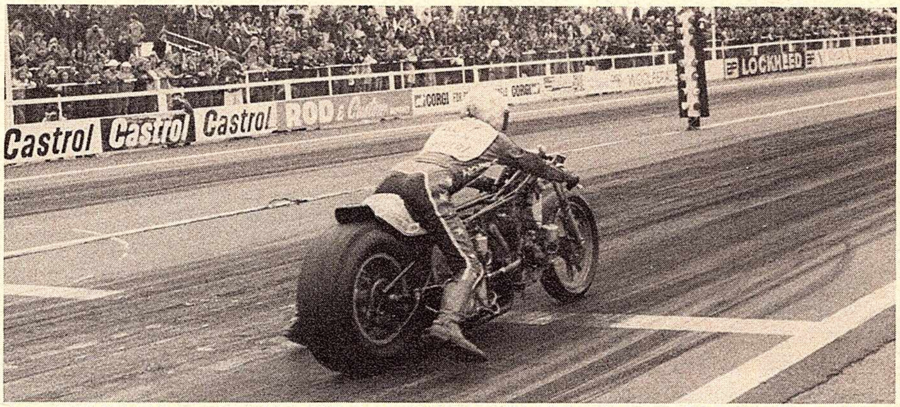
Santa Pod's right-hand lane contains one large bump towards the finish line, and the left one culminates in a series of smaller humps that are disconcerting but safe if taken in straight lines. The deceleration area is *rough.*

When T.C. Christenson, John Gregory and the "Hog Slayer" crew first set eyes on the 10-year-old strip, they naturally aimed their sights on the eights. The first test quarter produced a 9.02; the second an 8.6. Subsequent competition runs over two weekends tripped the clocks in 8.37, 8.47, 8.37, 8.41, 8.37, 8.56 and 8.62. Christenson won six times and lost once to Danny Johnson on Goliath. The British drag racing fans, crowding the Pod to see the Americans conquer, had never witnessed such a consistent string of sub-nines. In contrast, British-brewed eights had been rationed meagerly, the first coming in the June of '75. And of the three men credited with eights, two were (and are) reluctant to predict repeat performances.

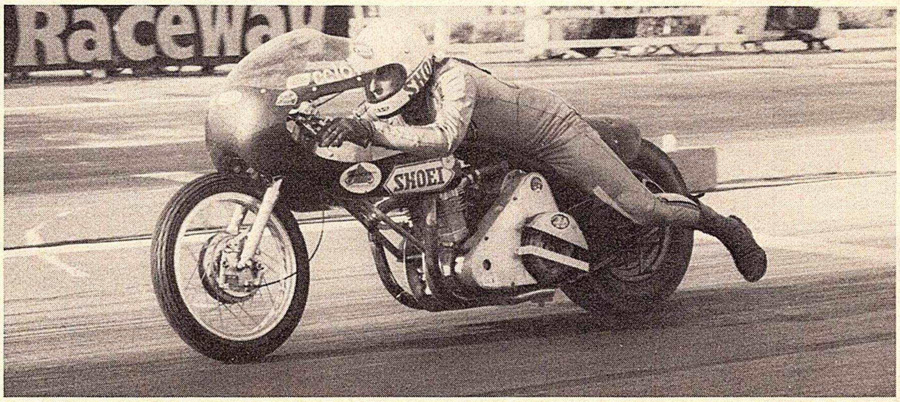
Christenson's demonstration genuinely reflects the two long years Britain lags behind America, a country richer in drag racing competition, equipment, finance and expertise. The assessment is accurate, but says nothing for noble British endeavor, nor does it appreciate the battle waged against colossal adversity. Drag racing opportunities are severely restricted, with Santa Pod ranking as the country's sole permanent raceway. European mainland interest is minimal, though growing slowly in Sweden and in Holland, where they close narrow public roads for the action and boast of a Secretary of State for the Environment who's sympathetic towards the sport.

British winners do not roll in riches; $100 goes to Top Bike at the Pod. Sponsorship is generally doled out in halfpenny pieces. The lucky recipients receive free helmets, maybe oil and chains, and possibly financial helping hands with engine re-builds. Monster-power, double-engine bikes are rarities, and getting them sorted a painfully long, time-consuming process. Few and far between aptly describes the special-component manufacturers.


*Keith Parnell, using a 50-run-old Avon slick and a 750 Triumph engine, was first Britisher in the eights.*



*John Hobbs' double is current King of Europe with 8.3-sec ETs, 170 mph terminals and handling problems.*



*John Cliff's 803cc blown twin uses Puma cases and cylinder, a Weslake crank, and a 1500cc Shorrock blower.*

But British drag racing has come a long way in the last three years or so since Alf Hagon's V-twin JAP lorded over the English quarter and the Hagon workshop was the only source of special bits. Nowadays, the majority of bikes are good-lookers, professionally conceived and correctly engineered. The progress and the innovating are by any means impressive, and the times turned by 750s are good by all standards.

Fast British times are achieved by twin cylinders, moderate power and monumental performance. As the extreme example, take the case of Mick Hand and his ten-year partnership with a Honda. September last, Mick shot a 9.75 sec/142 mph on his *two-fifty* twin, equipped with ancient CB72

*(Continued on page 12)*

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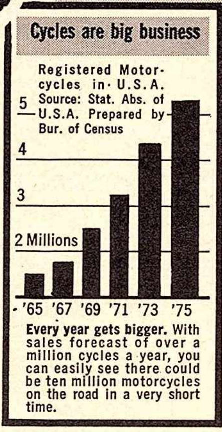

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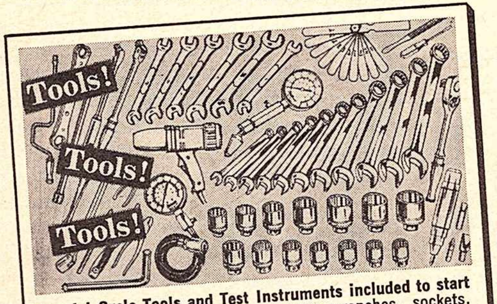

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If you've been riding your bike for fun the past few years, you can see for yourself that more and more girls are taking up the sport. And this means more bikes every year . . . and bigger demand for motorcycle mechanics. So get in on the action . . . get in on the fun — start making good money as a motorcycle mechanic.

### Your Future is in Your Own Hands

The big demand means you can decide for yourself whether you want to work for someone else or get into your own cycle repair business. Start in your spare time repairing cycles at home — or get a job with a motorcycle shop! After you've been a working mechanic, you can decide whether you want to start your own profitable repair business.

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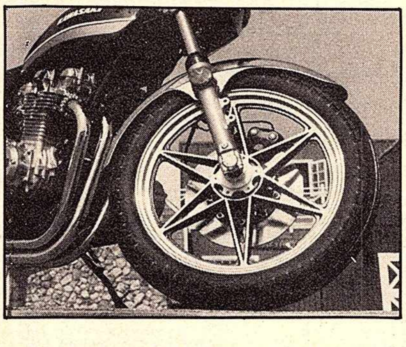


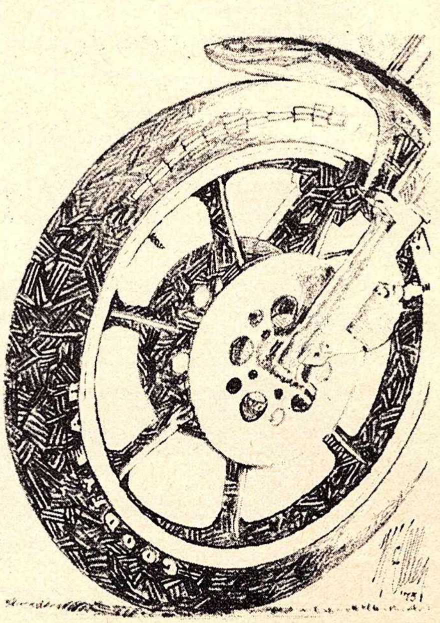
basics, 550cc blower, 80 per cent nitro content, and a crankshaft obtained from a wrecker's yard. Not bad?

Because "production" drag machines and engines are unheard-of luxuries, the novice's standard procedure is to find a 650cc Bonneville engine, a Norton gearbox, and a second-hand frame. If blessed with a wise head on novice shoulders, he's kept from attacking the engine with ill-founded tuner's zest. If he survives his initiation, he's then ready to graduate to "Standard British Drag Bike Mk.2": a 750cc big-bore conversion, two or three speed gearbox, and a medium-volume supercharge.

Being unaccustomed to abuse, the poor Triumph cylinder block lets loose in the critical area above the crankcase flange. Therefore an absolutely necessary addition is a hold-down kit, often consisting of a steel plate and bar structure bridging the head and barrel, and connected to two aluminum plates. One plate is bored to fit snugly around the drive side bearing boss, the other one under the timing side cover. Depending on bhp, nitro content and boost, the crankcases receive reinforcement through plates welded on at strategic points. However, as 50 per cent nitro produces a reasonably competitive tool at this development stage, recourse to welding trickery is not vital.

Norton castings conceal special internals, reducing gearbox ratios to three: two effective and one "engine saver" overdrive, engaged if the competitive pressure slackens in the opposite lane. Triumph crankshafts (preferably balanced), connecting rods, and sundry other stock pieces are good for putting the "SBDB Mk2" into the nines.

The "Big British Boomer" concept receives further refinement by the employment of a high percentage of special components. As an excellent basis, the British constructor may well go for Puma crankcases, exceptionally rugged casting in high grade aluminum, up to .875-inch thick in places. A companion piece could be Weslake's crankshaft, which is highly rated among the options. A genuine one-piece product, Made in England, it costs the drag exponent $326



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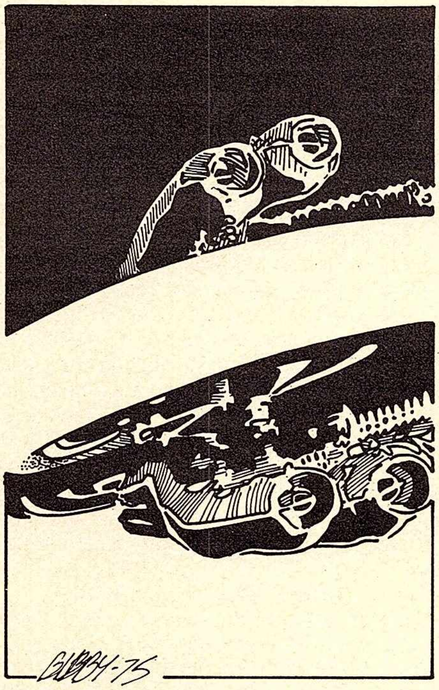
or more. But bent British con rods, a source of expensive annoyance, sometimes send the drag men shopping abroad for top-quality steel rods, like the $180-per-pair Carellos from America.

Aluminum barrels come from Weslake and Puma; Morgo produce steel barrels, and all are available for playing the capacity game. The 75mm Morgo gives 750cc, the 79mm Weslake raises it to 803cc with standard crank, and 879cc comes up from a "stroked" combination of Weslake crankshaft and Puma cylinders. Puma barrels and crankcases obviously go together, a particular attraction being the outside head-to-crankcase studs which really put the squeeze on the block. "BBB" equipment will almost certainly include a Shorrock supercharger and SU carburetor, a two-speed transmission and one type or another of slider clutch. It'll burn a mixture of 80–85 per cent nitromethane and get traction from an M&H slick, six inches wide.

Entirely in keeping with "SBDB" tradition, Keith Parnell fired Britain into the eights (8.93 on a five-year-old Triumph-based 750, complete with worn barrels and an over-age (50 runs!) 4-inch M&H. Appropriately the specification was, as drag machinery goes, all very non-exotic: 750 big-bore with "hold down," stock Triumph crankshafts and rods, and ordinary Hepolite pistons.

Counting heads in British drag competition cannot be attempted with accuracy, but there are probably fewer than 100 active racers in any year. Of these, between fifteen and twenty are deemed dedicated sportsmen, contesting every meeting and achieving impossible feats of paddock improvisation. The drag racing community is tightly-knitted and open-handed: a foe on the strip is a comrade in distress off it.



Goodwill and camaraderie reflect in the manner new manufacturers come into the special-component field. Mostly owners of mechanical engineering businesses, they pursue their drag-racing interest with fine disregard for large turnovers and big profits. Pete Davis, the Puma man, got into the drag engineering game *via* involvement with grass-trackers. John Clift, himself an 8.91 hotshot, builds frames for other aspiring eight-second men and conveniently omits labor charges. Sheer enthusiasm must account for two guys named Pete Miller and Ray Baskerville coming up with a two-speed instant-change box using epicyclic gears from automobile overdrive units. Also on the transmission side, George Bewley produces lightweight gearboxes in the Worcestershire town of Pershore. (One Bewley box went to America with Danny Johnson.) Intended for use with middle-power engines, the Bewley two-speeder has a full-power change facility by means of the low ratio dogs staying in engagement until high is finally home.

The portents point to a brighter British drag racing future, with more professionalism, more promotion, more recognition. Collectively, drag racing practitioners are on the road forward. For one individual, John Hobbs, it's a case of standing on the brink of great success. Hobbs and his 400 bhp double-Weslake "Hobbit" are the amalgamation of British ambitions. The fastest European, sponsored and promoted, and fairly regularly in the eights, he looks world-class and fit to trade Transatlantic trips with Christenson and Johnson. There's even talk of the AMDRA picking up the tab.

—*Jim Greening*

# Tips

## More Honda Hints

Changing spark plugs on a Honda CB750 is made a lot easier if you have a Snap-On 18mm, 12-point deep socket (#SFM18). This is not really a plug socket, but it gets a solid grip on the Honda's plugs and fits so well into the machined recesses around the plugs that all one has to do is drop a plug in place, slide the socket over it, and turn; the plug will be aligned over its hole and the chances of getting it cross-threaded almost nil. If you use this socket with a ⅜-inch universal joint, an 11-inch extension and a ratchet handle, the Honda's plugs may be removed and installed quite easily. When the engine is hot, a magnetic probe is useful in fishing the plugs out of the recesses. Snap-On also offers plastic pliers for removing plug caps, and a flexible-shaft plug starting tool, both of which will help you do the job quickly while keeping your skin unblistered.

If you use a Lockhart oil cooler, it can be rubber-mounted on your CB750's horn brackets, using Honda tail-light mounting grommets, bolts and washers. Several different ones will fit; check with your dealer's parts man.

After you've mounted the oil cooler you'll have to find another location for the horn. An SL350 K1 will fit under the tank on the ignition lock bracket, and even comes with rubber mounts. When this is done the ignition lock must be moved up to the handlebar, where it is on the latest Hondas. You'll have to create a mounting bracket with a cover for the ignition switch face, or water will get into the lock. The new top-mounted Honda switches have a tiny hinged flap inside the key slot to exclude water; the old ones didn't, which may explain why they were sheltered under the tank.

If the lacquer on your Honda's engine cases, brakes and other polished aluminum surfaces weathers away and the bike begins to look scruffy, you can get it all off with Sears paint remover without harming the metal. To do the job right, take the part off the bike before you start cleaning. With the old lacquer removed, the part can be polished and re-lacquered or waxed. If you decide in favor of wax stay away from salt and keep it clean.

Simichrome polish removes scratches from glass, including watch crystals, very nicely. But it's a little abrasive for face shields, Windjammer windshields and other transparent plastics. I've found that Classic plexiglass cleaner does a great job on such items; you don't have to use much of it. I've been working out of a single can for more than two years and it's not half gone.

Jack Feldman
Gainesville, Florida

### CHARGER

Here's the best charger yet for 12-volt cycle batteries: the FEDTRO model AHC 12V, made as a trickle charger for automobiles. I bought mine a couple of years ago for $1.66 at a discount store when the regular retail price was $2.69.

This battery charger puts out a half-amp, at 12 volts, and is the perfect thing to keep a bike's battery ready to go during periods when you don't ride much (as in the winter). The charger has been made an easy-connect for automotive applications by having its output fed through a fitting that plugs into a car's cigarette lighter. I adapted mine for motorcycle use by replacing the plug-in fitting with a pair of alligator clips. The wire from the center of the plug is positive (+) and the one from the side contact is negative (—). The charger gets its power from any 110 VAC outlet.

You can leave this trickle charger on your bike's battery all the time you're not riding, because the charge rate is so low. Just keep the battery's electrolyte level up where it should be.

R. A. Martinson
St. Cloud, Minnesota

### STRIPPED SPLINES

When the splines between my bike's starter shaft and the kick lever stripped out, rather than split the cases and replace the shaft I thought of a way to salvage the situation using a drill and some nails:

Holding the kickstart lever at the correct angle I drilled four eighth-inch holes straight into the splines, with half of each hole being in the shaft and the other half in the kick lever. This drilling should be done with the pinch bolt loose. Then I pushed the nails into the holes, and tightened the pinch bolt. The nails restored the lever/shaft lock very effectively; it's possible that using drill rod or some similar hardened steel instead of nails might make a longer-lasting repair.

Andrew DeGraaf
Grand Rapids, Michigan

### CHAINS, BOOTS, DRAINS

I have discovered something about the importance of keeping chains clean and well-lubricated. Doing both, carefully, I have gotten 13,000 miles of service out of my present bike's original chain and have only passed the first adjuster mark; that's vastly better than the 6000-mile life I've had from other chains on my past five motorcycles.

For chain cleaning I take my bike to a high-pressure, do-it-yourself car wash. I get the selector switch for soap, and hold the cleaning nozzle right above the inside of the chain while turning the rear wheel. I keep turning and washing until all the road grit is off the chain, moving to the outside of the links after the inside looks clean. Then, counting on the residue of lubricant inside the links to prevent damage, I ride a couple of miles to let the chain throw off any water.

As a lubricant, I prefer to use McGlaughlin's Chain Lube, because it goes on as a liquid and dries virtually as hard as grease. The most effective way I've found to apply the lube is with a ½-inch paint brush, working it into the rollers with the brush's bristles.

I must stress the importance of frequency in chain lubrication. I lube my bike's chain at 300-mile intervals when most of my riding is around town; at 120 miles when touring.

Another thing I found was how to keep my bike's shift lever from wearing a hole in my $65.00 boots. I didn't want to buy a $4.00 spat for my left boot, because I wouldn't know what to do with the thing when I wasn't riding and it probably would get lost. It seemed a better idea to fit the shift lever with a leather cover, which I made out of the little finger cut from an old handball glove. Any glove would do; I used what I had. In any case, you use the finger, and stitch/tie it in place with nylon thread. The leather won't scrub away at the finish on your boot like the bare rubber does.

Anyone who has drained and replaced a bike's oil knows that there's a major problem in finding a suitable drain pan. The lady of your house will not like it if you use one of her best dishpans or other item of cookware for the job. So what you do is to buy a disposable aluminum foil roaster pan at the nearest supermarket. They have these in various shapes and sizes, but the one I use is about 12 x 10 x 2½ inches. The best thing about roaster pans is that they are easily bent to fit a particular situation—as in trying to get under a CB750 Honda's oil tank drain hole. The pans are cheap enough to be thrown away, if you don't want a used one cluttering your garage.

Finally, here's a tip for those who collect back issues of *Cycle:* I find that when I want a particular article I read in *Cycle,* it's a real pain to go fishing around through 75 magazines to find the one I want for reference. So I indexed mine, which is easy. You just get a 3 x 5 file box, and cards, at any office supply store and write up cards for articles that interest you. File the cards alphabetically according to title or subject matter, including the information about specific issues and page numbers. This is about the only way you can keep things like "Tips" available for recall.

Roland L. Onavage
Bowling Green, Ohio

*(Continued on page 16)*

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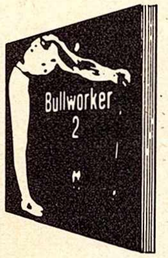

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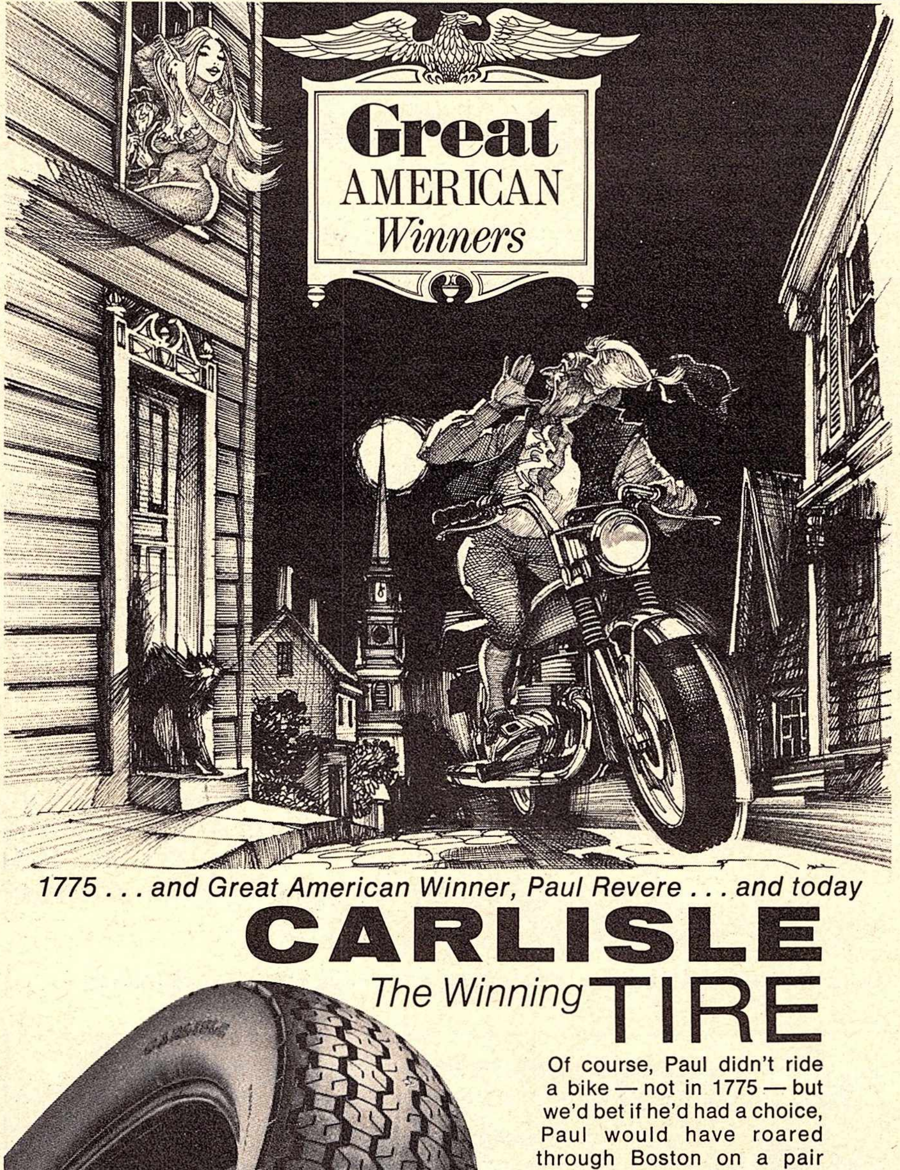

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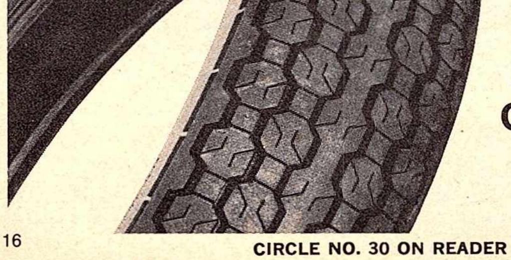

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## FROSTBITE

Here are cold-weather riding tips; all things learned from hard experience.

If the temperature is in the forties, or less, wear a rainsuit over your normal cold-weather riding clothes. A rainsuit is a fantastically good windbreaker, and will keep your body heat from escaping.

Get a good, and preferably waterproof, pair of mittens to wear over your gloves. It may sound like a bit much, but when you're riding faster than about 45 mph the wind-chill factor is so severe that you actually can get frostbite—even through a good pair of ski gloves. Wearing both gloves and mittens will keep your hands from getting really cold; anyone who has ridden through a winter will appreciate what this means.

Whatever else you do, don't leave bare skin exposed, as that's an invitation to frostbite. Wearing a long scarf wound around to cover everything from the bridge of your nose to below your collar make you look weird, but it's a good thing to do on a cold day. Also, be sure the gloves and/or mittens you wear are of the gauntlet type and won't let the frigid airstream run up your sleeve. Thermal underwear doesn't work if there's a draft inside your clothes.

Warm your face shield in hot water before trying to take it off or put it on. That will make the plastic easier to bend into place and keep it from cracking. And put some warm liquid in yourself. It's amazing how cold, like alcohol, can dull your reactions, so make frequent stops for hot, non-alcoholic refreshments.

In winter, water puddles can quickly turn into patches of ice, which means that you have to treat moist spots as ice. Motorcycles handle funny on ice; avoid it like the plague. Sometimes you can't avoid going through a little ice or snow and at such times you'll want to be rolling on good tires. Don't expect slicks to grip on a winterized road.

When starting out for a cold-weather ride kick the old beast over a couple of times before using the electric starter unless you keep your bike in a heated garage—which is the perfect approach if it can be done. Let the engine warm a while to get the cold-thickened oil moving before you roll.

When you ride, don't do anything sudden. Don't lean your bike into turns the way you would in warm weather even if the road is clear where you are because it may be slippery just ahead. Don't expect to be able to stop quickly, for the same reason. Don't ride in snow if that can be avoided, and never go out in a snowstorm. Leave all that to the snowmobiles. You can ride in winter—but you have to be careful.

Bob Swaim
Lyndhurst, Ohio

## SHIELD EXTENSION

On long trips the windshield-fairing on my Kawasaki 400 triple is not tall enough to give good protection at freeway speeds. But in town, especially during the rainy season, anything taller than the shortie I have would be inconvenient and hazardous.

I found the answer to my problem by mounting a Bell Star shield at the top of the windshield. I drilled four holes through the windshield about an inch from the top and then corresponding holes through the visor about a half-inch from its longer edge. Visor and windshield width are just right.

I then simply fastened the visor to the windshield as so: bolt, washer, Star shield, rubber washer, windshield, lockwasher and nut. Now I have my choice of windshield heights, tints, and have the extra three inches I need on long trips.

Jim Mitchell
Lafayette, California

### Z-1 OIL CHANGE

In windy conditions my Z-1 would suck oil into the air breather and then into the engine. My dealer did not have the answer for this problem.

One day when I was at the local Kawasaki dealer, a representative from Kawasaki told me that even though a Z-1 holds 4.2 quarts of oil the last ½ quart is almost impossible to drain out. Since then I only put in 3½ quarts of oil when changing it. This has solved my problem completely.

Phil Hohm
Huron, South Dakota

### ADD-ON FILTER

A problem all too common with motorcycles, especially those that are hopped up or see a lot of "heavy duty" use, is keeping the oil clean. I have a 1973 Sportster (XLCH) and think I have found a good way. The electric start model comes with a token oil filter (strainer) but I don't think much of it. What I did was to get an EMPI filter adapter kit for a Volkswagen at K-Mart where it is available for about seven dollars. I had to drill and tap the threads to accept ⅜ inch brass fittings, using teflon tape to seal the fittings. A FRAM PH-35 filter works fine (I think it's for a late model Renault Dauphine car). This setup adds about ½ quart of oil to the system and keeps it much cleaner longer. It will work on any cycle that has a dry sump oiling system. The unit looks like a factory item and it can be polished to a high luster.

James Vinsant
Manhattan, Kansas ◉

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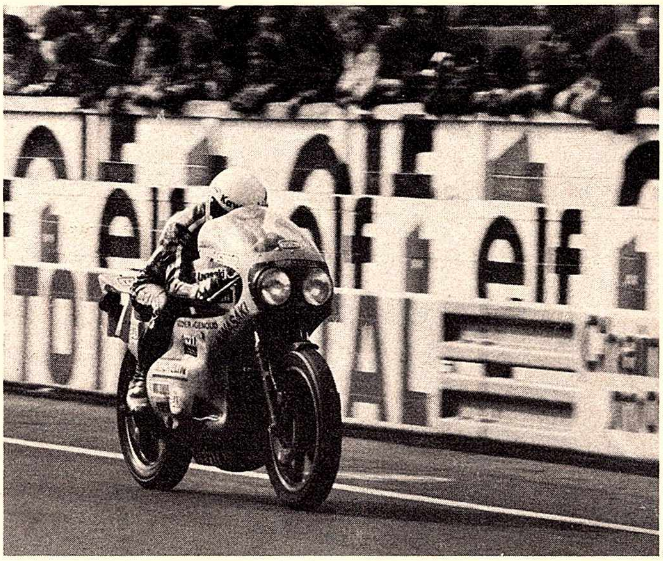

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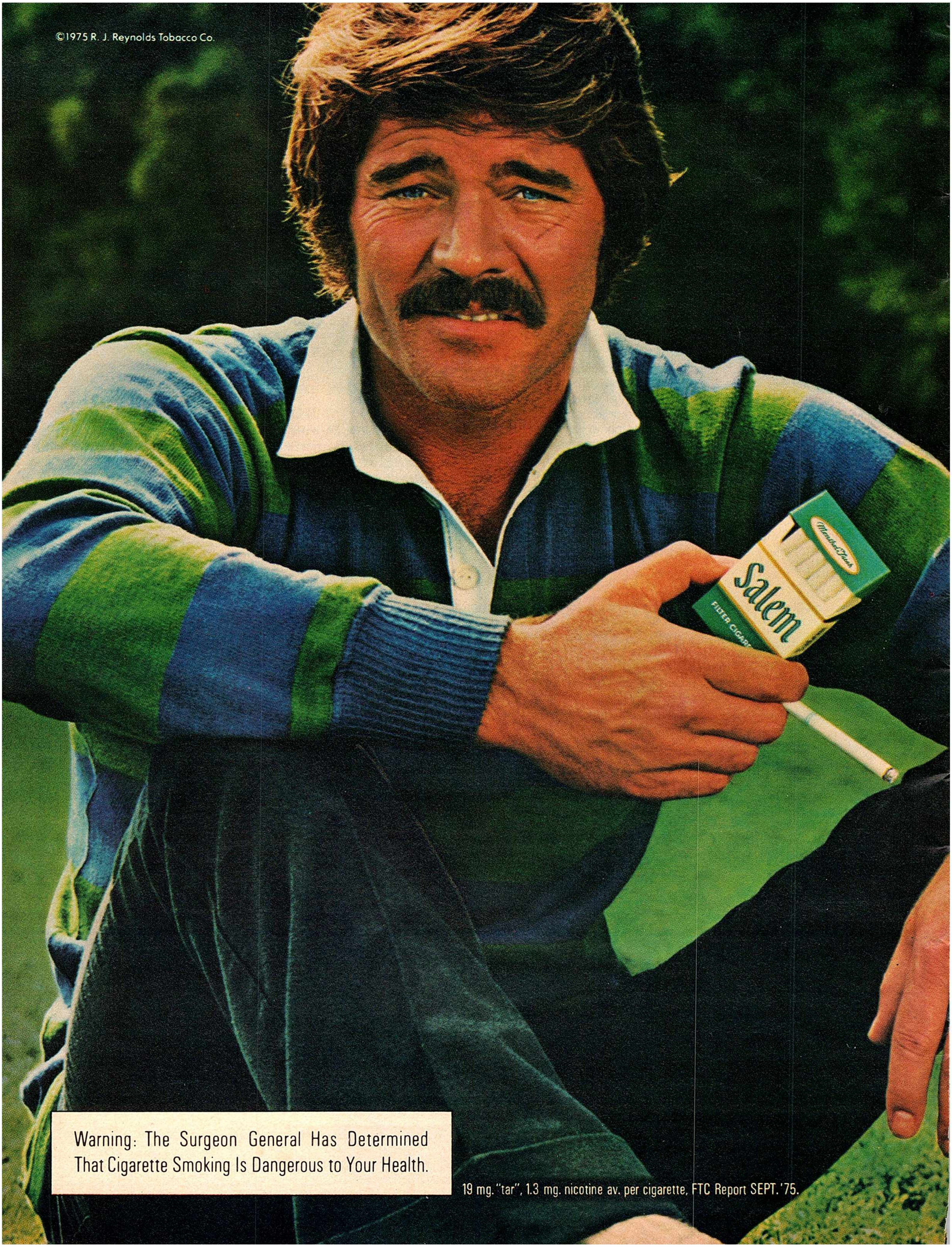

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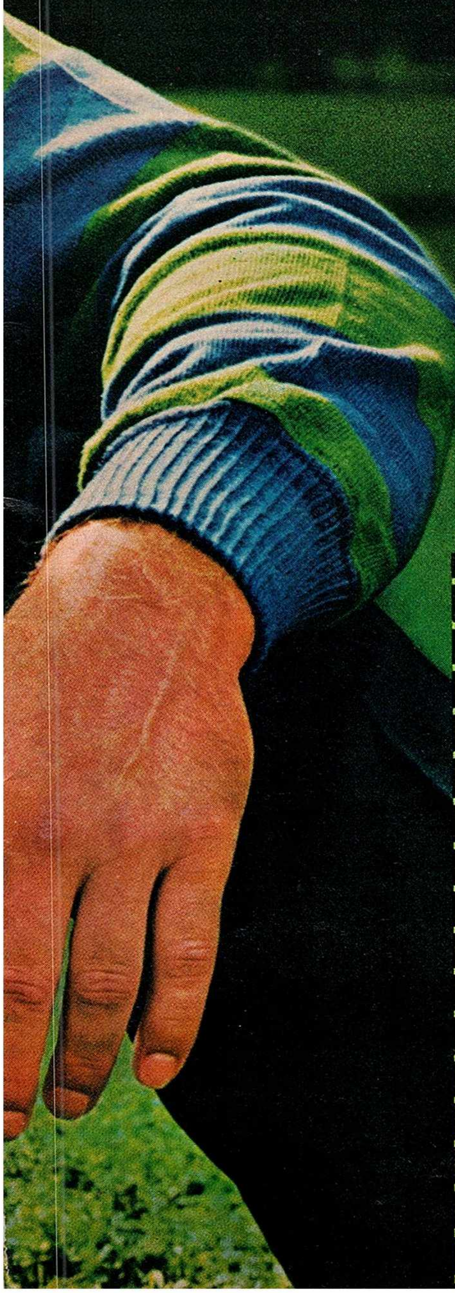

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**MONEY BACK GUARANTEE**

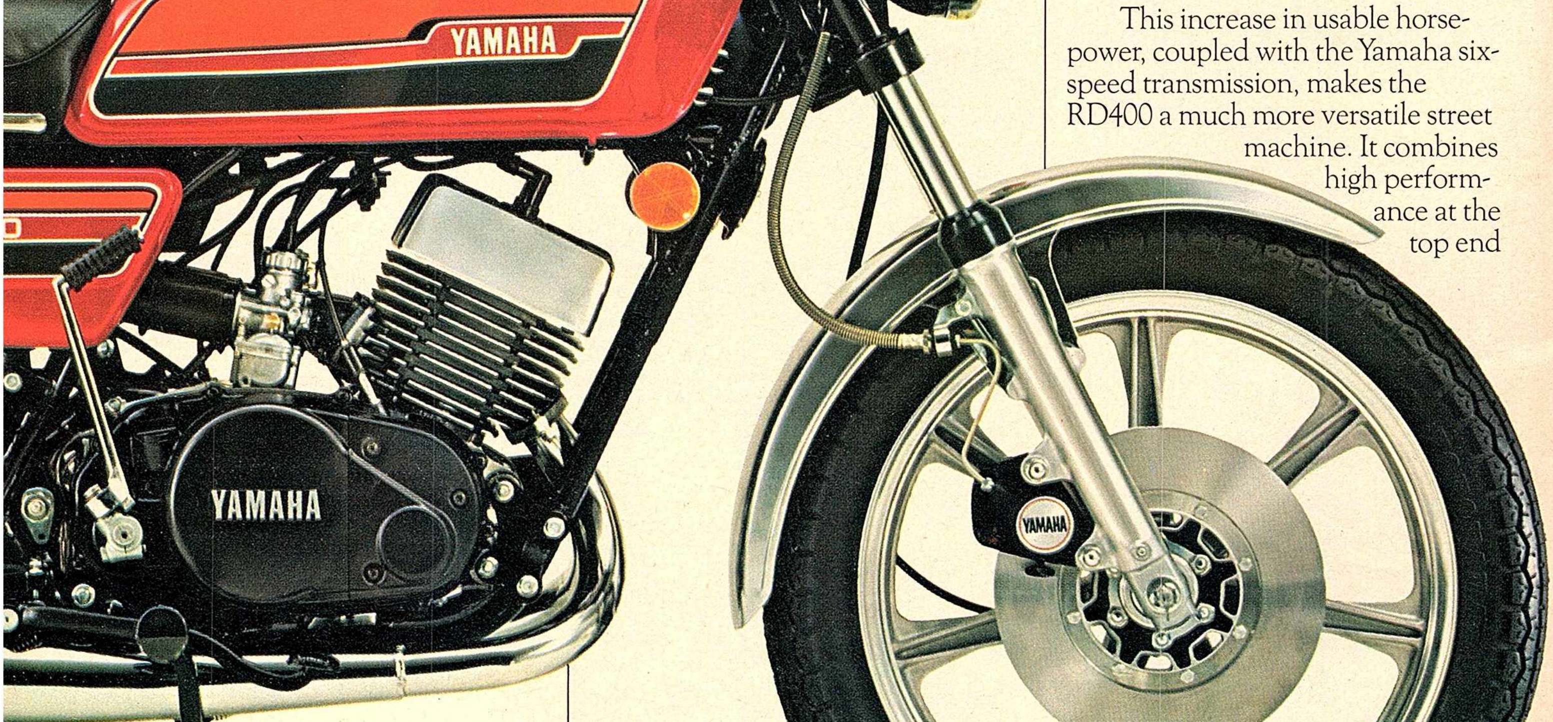
# The new Yamaha RD400 is more than
# For all practical purposes,

## The living legend.

If any motorcycle ever deserved to be called "legendary," it's the Yamaha 350 two-stroke. The Yamaha 350 production racers have absolutely dominated their class for years. And the Yamaha RD350 street machine is renowned for its ability to run away from bikes with more than twice its displacement.

## A whole new motorcycle.

How do you improve on that kind of success? The styling changes of the RD400 are obvious. It's the first production motorcycle to have cast aluminum wheels as standard equipment. The RD400 has a new frame design and a new, large capacity fuel tank.



*The new cast aluminum wheel.*

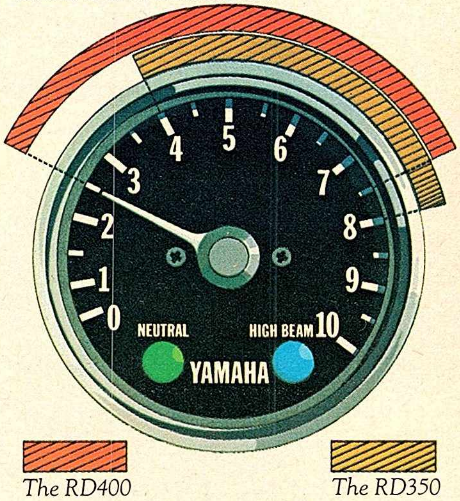
## It's got street sense.

We've applied all of our expertise to one single objective: building a street machine as quick and responsive over a broad powerband as the 350 is quick and responsive at high rpm's. We wanted to build a more versatile and usable street machine. And the RD400 is just that.

## Engine re-design.

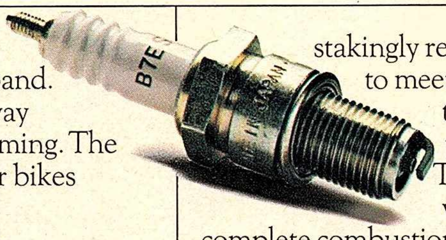
We began by adding 8mm to the stroke of the RD350, taking it up to 62mm. Bore remains the same as the 350: 64mm. So the RD400 has a 399cc displacement developing approximately the same amount of horsepower as the 350. As a result, the RD400 has better acceleration, better low rpm torque, and a much broader powerband. Usable power on the 350 runs from 4000 to 8000 rpm. Usable power on the 400 runs from 2500 to 7500 rpm. That's a 25% increase in effective rpm range.

## The Powerband.



This increase in usable horsepower, coupled with the Yamaha six-speed transmission, makes the RD400 a much more versatile street machine. It combines high performance at the top end

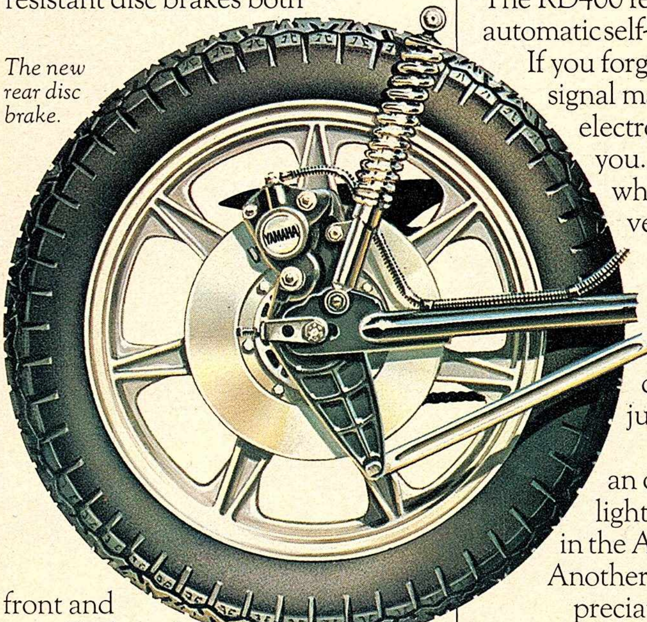
# a refinement of our legendary 350. it's a whole new motorcycle.



with better response throughout the powerband. The RD350 can run away from bigger bikes screaming. The RD400 can leave bigger bikes standing still.

## Improved braking.

Having given the RD400 more going power, we had to give it more stopping power. The RD400 has a hydraulic braking system with fade-resistant disc brakes both front and rear. *Cycle* said the Yamaha front disc brake was the most effective they'd ever tested. And the rear brake of the RD400 is essentially the same brake.



*The new rear disc brake.*

## Improved handling.

We've also made the RD400 a better handling motorcycle. The frame has been completely re-designed, and the engine is farther forward, for better balance. Front forks and rear suspension have been improved to better absorb the shocks of those small surface irregularities that can become big problems when you're cornering. Like the RD350, the RD400 corners beautifully.

## Improved carburetion.

The RD400, like the RD350, is fed by twin 28mm Mikuni carburetors. But carburetion has been painstakingly refined in order to meet the needs of the broader powerband. This, combined with the more complete combustion of the longer-stroke engine has decreased spark-plug fouling—a common problem in high performance engines.

## Other important features.

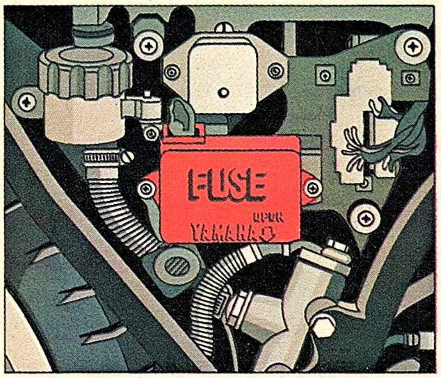
The RD400 features a Yamaha first: automatic self-cancelling turn signals. If you forget to cancel the turn signal manually, a solid state electronic circuit will do it for you. That's a safety feature which will prove to be very convenient.

The main electrical connections and all of the fuses of the RD400 are in one convenient box located just below the seat.

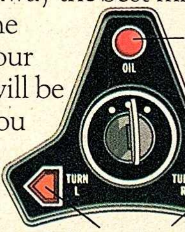
The RD400 also has an oil warning light which lights up when the oil level in the Autolube is getting low. Another feature you'll appreciate in city and country riding.

## In short.

The new Yamaha RD400 is the best all-around mid-size street machine since the Yamaha RD350. And that makes it far and away the best mid-size street machine on the market. Your Yamaha Dealer will be delighted to let you discover that for yourself.

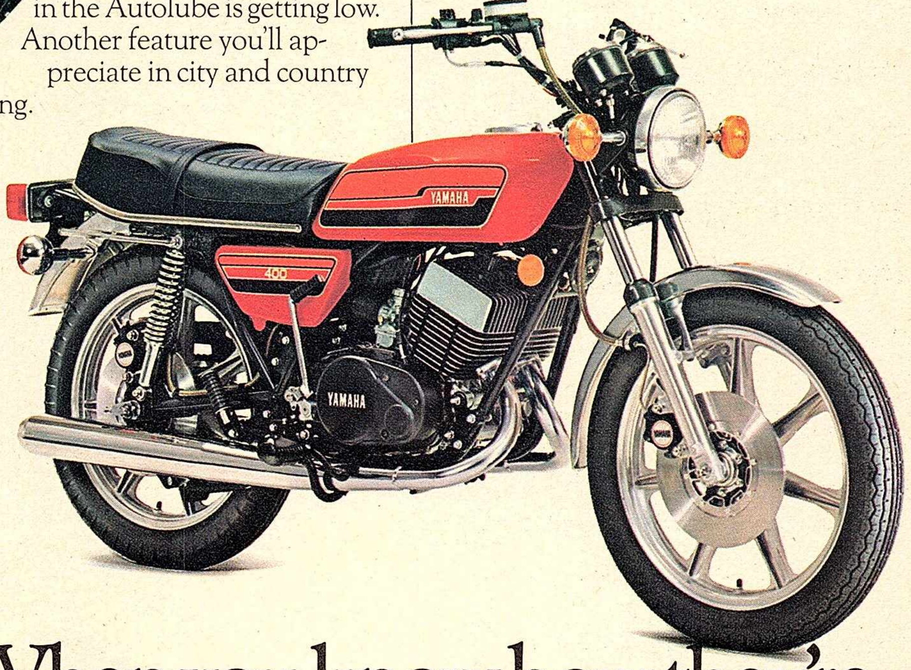


*The compartmentalized fuse box.*



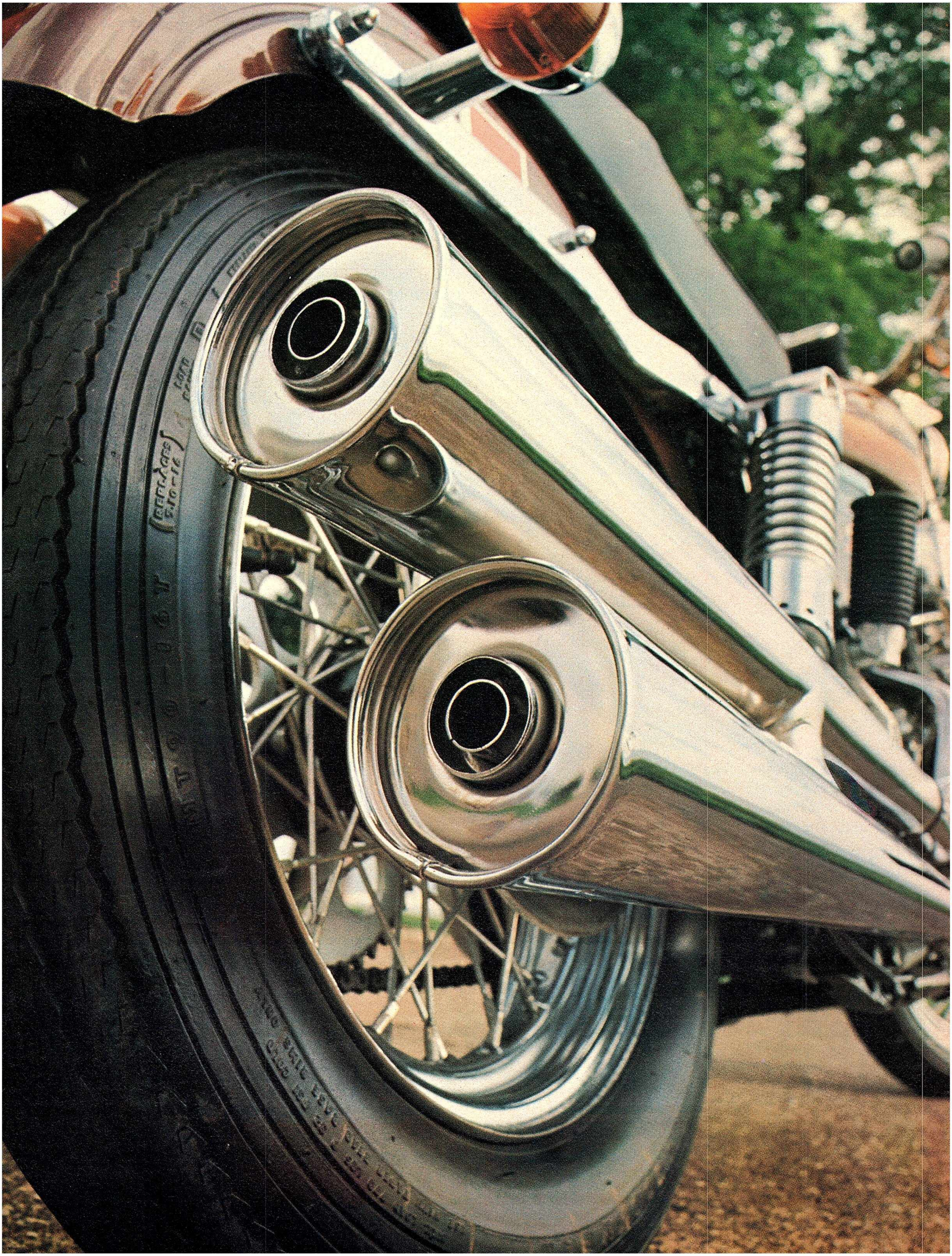
*Oil level warning light.*

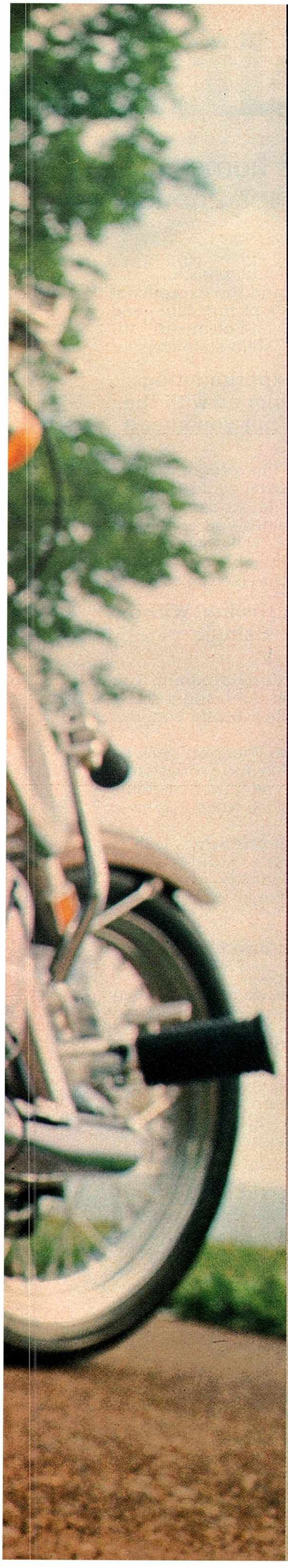
*Self-cancelling turn signal indicators.*



## When you know how they're built, you'll buy a Yamaha.

CIRCLE NO. 23 ON READER SERVICE PAGE.





# What is it about a Harley-Davidson?

With so many look-alike bikes around these days, it's reassuring to know that there's still one motorcycle that stands apart.

The Harley-Davidson.

What is it about this machine that makes it so unique, so instantly recognizable?

It's sound. Take the FXE-1200 on your left. Even blindfolded, you would know it's a Harley-Davidson. Because it has that incomparable Harley-Davidson sound. Quiet—yet deep, rich and powerful. A thing of beauty.

It's torque. With the FXE as with all the Harley-Davidson superbikes, it's positively psychedelic. A king of the road feeling of power.

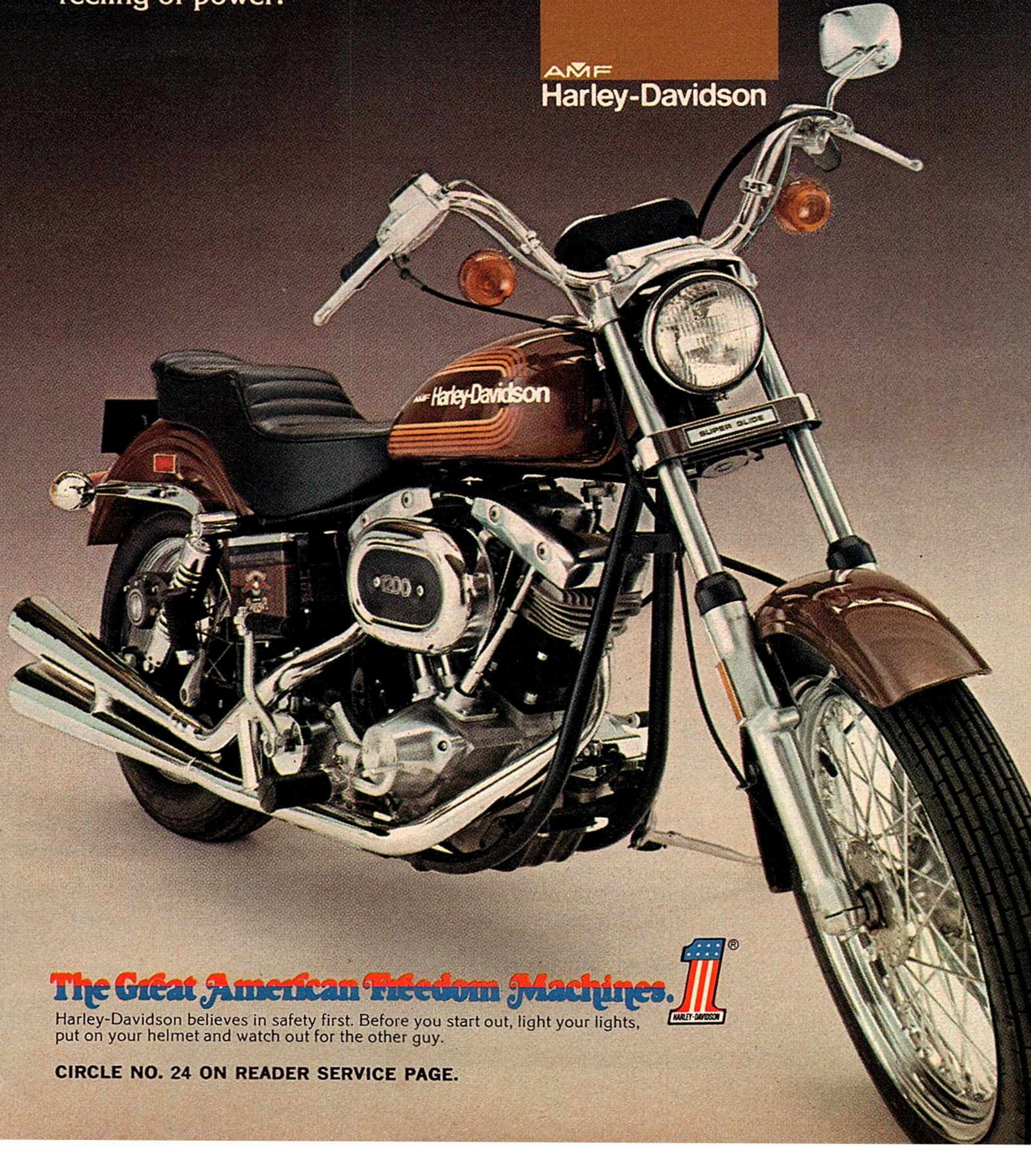
It's styling. The FXE, for example, is the classic's classic. The last word in lean, muscular elegance.

It's all the other things that make a Harley-Davidson a Harley-Davidson. Precision engineering. Unmatched attention to detail. A 70-year heritage of superb craftsmanship.

Your AMF Harley-Davidson dealer has assembled his entire 1976 line of superbikes and light/middleweight on-off road and street bikes for your inspection.

Look him up. And learn about these extraordinary machines from a man who really knows motorcycles.

AMF
Harley-Davidson



**The Great American Freedom Machines.**

Harley-Davidson believes in safety first. Before you start out, light your lights, put on your helmet and watch out for the other guy.

**CIRCLE NO. 24 ON READER SERVICE PAGE.**

# Build it yourself...

## With a learn-at-home program as fascinating as home entertainment electronics, reading about it is just not enough!

Once you discover something that really fascinates you, no matter what it is, reading about it is just not enough. You want to be involved. You want firsthand experience.

That's exactly how Bell & Howell Schools' exciting learn-at-home program in electronics works. You learn by doing, experimenting, trying it yourself. That's why throughout this unique program you get practical "hands on" experience with some of today's latest electronics training tools.

### Throughout your learning adventure with Bell & Howell Schools, the key word is build.

It doesn't matter if you've never had any training in electronics before. We start you off with the basics and help you work your way up one step at a time. As a matter of fact, with your very first lesson, you receive a special Lab Starter Kit to give you immediate working experience on equipment as you are picking up the fundamentals. It makes the learning process faster and certainly a lot more interesting.

You'll build and work with remarkable educational tools as you explore advances in electronics—"State-of-the-art" equipment that's being used today—and will be used tomorrow. So the skills and knowledge you will acquire will be useful for years to come.

### You'll build your own electronics laboratory!

With Bell & Howell's Electro-Lab® electronic training system—theory comes to life. And you'll make it happen! In building each of these modern test instruments you'll get experience in wiring, soldering, assembling. Then you'll use the lab for testing, trouble-shooting and circuit analyzing.

First, the **design console**. After you assemble it, you'll be able to set up and examine circuits without having to solder them in place.

Next, you'll build a **digital multimeter**. This important instrument measures voltage, current and resistance, and displays its findings in big, clear numbers like on a digital clock.

Then comes the **solid-state "triggered sweep" oscilloscope** similar in principle to the kind used in hospitals to monitor heartbeats.

You'll use it to analyze tiny integrated circuits. The triggered sweep feature locks in signals for easier observation.

### You'll actually build and work with the new generation color TV... investigating features you've probably never seen before!

This 25" diagonal color TV has digital features that are likely to appear on all TV's of the future. Features made possible by the applications of digital electronics to home entertainment.

You'll probe into the technology behind all-electronic tuning. And into the digital circuitry of channel numbers that appear on the screen! You'll build-in an on-the-screen digital clock and learn to program a special automatic channel selector that goes directly to the channels of your choice.

You'll also better understand the exceptional color clarity of the Black Matrix picture tube, and gain working knowledge of "state-of-the-art" integrated circuitry and the 100% solid-state chassis.

### After building and experimenting with this TV, you'll be equipped with the kinds of skills that could put you ahead in electronics know-how.

Once you've completed this program, your skills in electronic trouble-shooting could lead you in exciting new directions. While we cannot offer assurance of income opportunities you could use your training: to seek out a job in the electronics industry, to upgrade your current job, or as a foundation for advanced programs in electronics.

### Building. Learning. Growing. Without missing a day of work or a single paycheck!

Because this is a home study program, you study at your convenience—without being a classroom captive. That means there'll be no conflicts with your job or other interests.

And even though you're on your own, we'll be there to help if you should ever run into a rough spot. Most schools make you mail in all your questions. We have a toll-free line you can call when you have a question that can't wait.

For even more personal attention, Bell & Howell Schools' "help sessions" are held in 50 major cities at various times throughout the year, where you can meet and talk with your instructors and fellow students.

### A school's reputation can't be built on what it is going to do.

...but rather on what it has done and is doing right now. That's why Bell & Howell Schools' 43 years of experience in electronics home study is your best guarantee that our "hands-on" learning method really works.

Many thousands of people each year choose Bell & Howell Schools' home learning programs to start or further their electronics education. Discover this fascinating program in home entertainment electronics for yourself.

### Mail in the postage-paid card for full details!

Taken for vocational purposes, this program is approved by the state approval agency for Veterans' Benefits.

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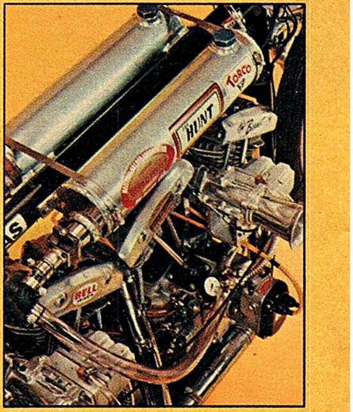
Simulated TV test pattern.

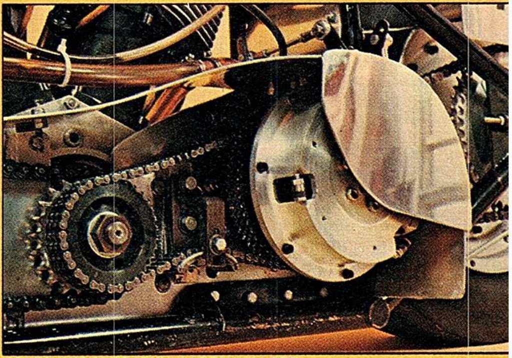
# THESE THREE

Between Joe Smith's double-engined Harley-Davidson, Russ Collins' triple-engined Honda and the double-engined Norton of T.C. Christenson and John Gregory, Top Fuel drag racing has become a seven-second, 180 mph squabble—and one of the best shows in town.

By Cook Neilson

● So Top Fuel drag racing has finally shaken down to these three: Joe Smith's double-engined sledgehammer of a Harley-Davidson; the light, lyrical, stinging twin-motor Norton of T.C. Christenson and John Gregory; and Russ Collins' Mighty Wurlitzer of Speed, the triple-engined Honda, as much entertainment and kinetic art as it is race bike. Coming from entirely different directions these three have met not at a place or time, but at a very precise rate of acceleration; only sixteen hundredths of a second separate them in terms of how long it takes to traverse a quarter-mile from a standing start. The double-engined Harley has roots extending back to the mid-Sixties, when its builder, Joe Smith, was trying to get a series of Knucklehead engines to live on jolts of nitro they found unappetizing; the double Norton's forebearer was an injected single-engine rig that was the quickest and fastest of its type; and the Honda came from, well, it came from the boundless imagination and busy fingers





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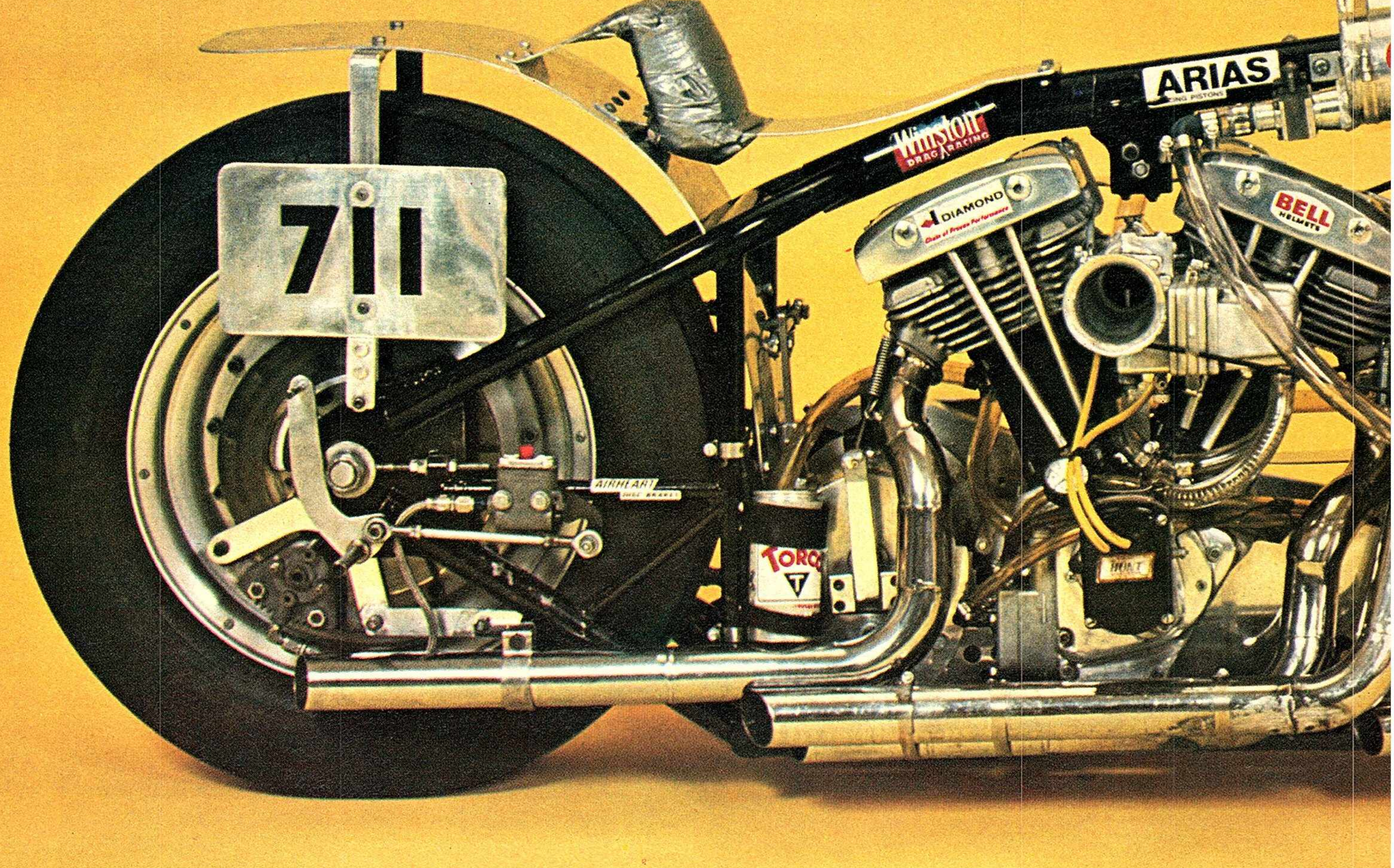
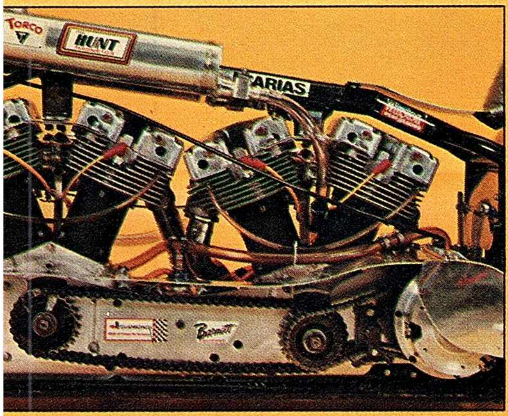




of Russ Collins, motorcycle racing's greatest showman.

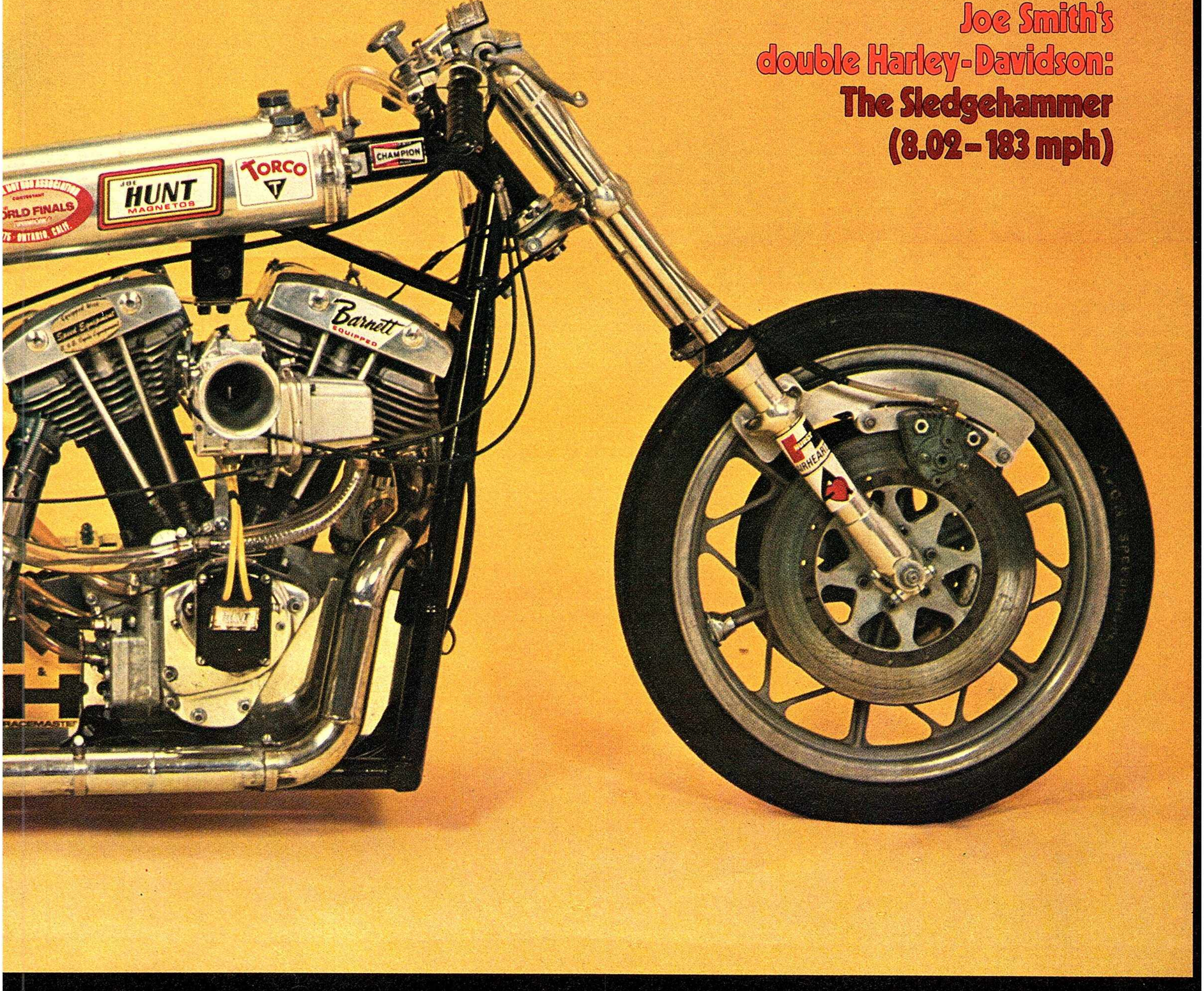
The bikes that were forces to be contended with a few years ago no longer are. Big-inch single-engined 74s and Sportsters peaked in the 9.0 to 8.8 second range; what made them into museum pieces were the early double-engined Harley-Davidsons, whose presence at drag strips was preordained by the progress made by M&H Tire Company's Marvin Rifchin, who introduced the six-inch-wide racing rear skin, and by Sandy Kosman, who saw to it that (for a price) the new tires had wheels to mount on. The result of M&H's and Kosman's efforts was simply this: there suddenly was traction enough to contain the horsepower provided by two enormous engines lashed together, and the competitive days of the single-engined Sporters and 74s ended . . . just like that.

The single-engined 74 that stayed competitive for the longest time, namely Joe Smith's, should not escape without notice, however. Not only did Joe use it to win the Indy Nationals in 1971 and 1974 (he was runner-up in 1973), but it propelled him to motorcycle drag racing's first sub-nine-second quarter-mile. Using engines of different sizes (all over 100 cubic inches), using different induction systems (carburetor and fuel injection) and developing more and more progressive drive train components, Joe's single was not only a tremendous race bike in its own right, but served as a test bed for components and ideas that, in 1975, brought forth the current double.

It is a beast of a motorcycle, Joe's double. It weighs 530 lbs. and its wheelbase varies between 75 inches and 76 inches. The engines Joe used at Ontario to run 182.55 mph displace 102 cubic inches each. The crankcases are late-model 74s, with bores of $3^{13}/_{16}$ inches and strokes of 4½ inches. The stroker flywheel assemblies come from S&S, 10.4:1 pistons from Arias and broad-bore cylinders from Burkhardt Engineering.

Mondello, of drag car fame, worked up Smith's cylinder head ports. Joe does his own valve seats, Burkhardt handles the guides and valves and the valve springs are Offenhauser's. Valve head size is stock (1 15/16-in. intake, 1⅞-in. exhaust), but the stems have been ground down to 11/32-in. The guides are fabricated

# Joe Smith's double Harley-Davidson: The Sledgehammer (8.02–183 mph)



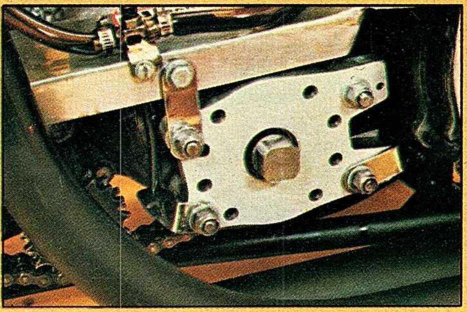
# THESE THREE

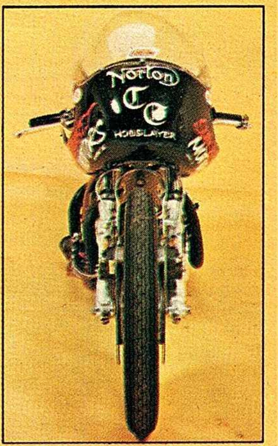
from 4130 steel and fitted with aluminum-bronze helicoil inserts.

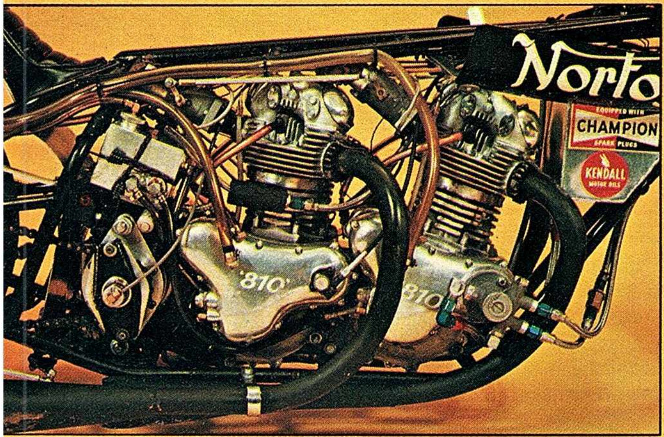
You may have noticed in the photographs that the S&S carburetors on Smith's Monster-Glide are . . . different. Gordon Kateley, a long-time friend and helper of Smith's, welded and machined dual float bowls for each 1⅞-in. carb. Why? Because the bike kept running out of fuel, forcing Joe to shift early and keep the engine speed down to avoid starvation. The Kateley bowls, installed just before Ontario, were responsible in large part for the bike's 180-plus trap speeds. Main jets are "about" .300-in. in diameter; the dump tube measures "about" .307-in.

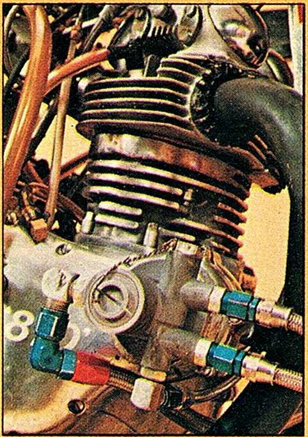
The engines are coupled with Diamond #530 chain connecting two extra-large drive sprockets; dual-row Azusa Engineering chain and sprockets carry the power to the rear wheel. A standard Sportster clutch, extended one inch to hold 11 sintered iron Barnett plates, is engaged by a Smith-designed, Scott McDonald-machined pressure-plate/"hat." Unlike Russ Collins's, Smith's slider is hand-actuated and connects to a Lenco two-speed, foot-actuated transmission. The Lenco is a 43% overdrive unit; Joe plans to switch next year to a B&J transmission like the one in Danny Johnson's double Sportster. It is underdriven in low and direct in high, just the opposite of the Lenco.

Joe has been building his own chassis since the mid-Sixties. The double's frame is fabricated from 4130 tubing, its steering head angle is 40 degrees, its trail measures 7½-in. and it carries engine-mount plates made of 7075 aluminum. ("The 7075 stuff is too brittle. For next year I'm switching to 6061 T6.") The front end







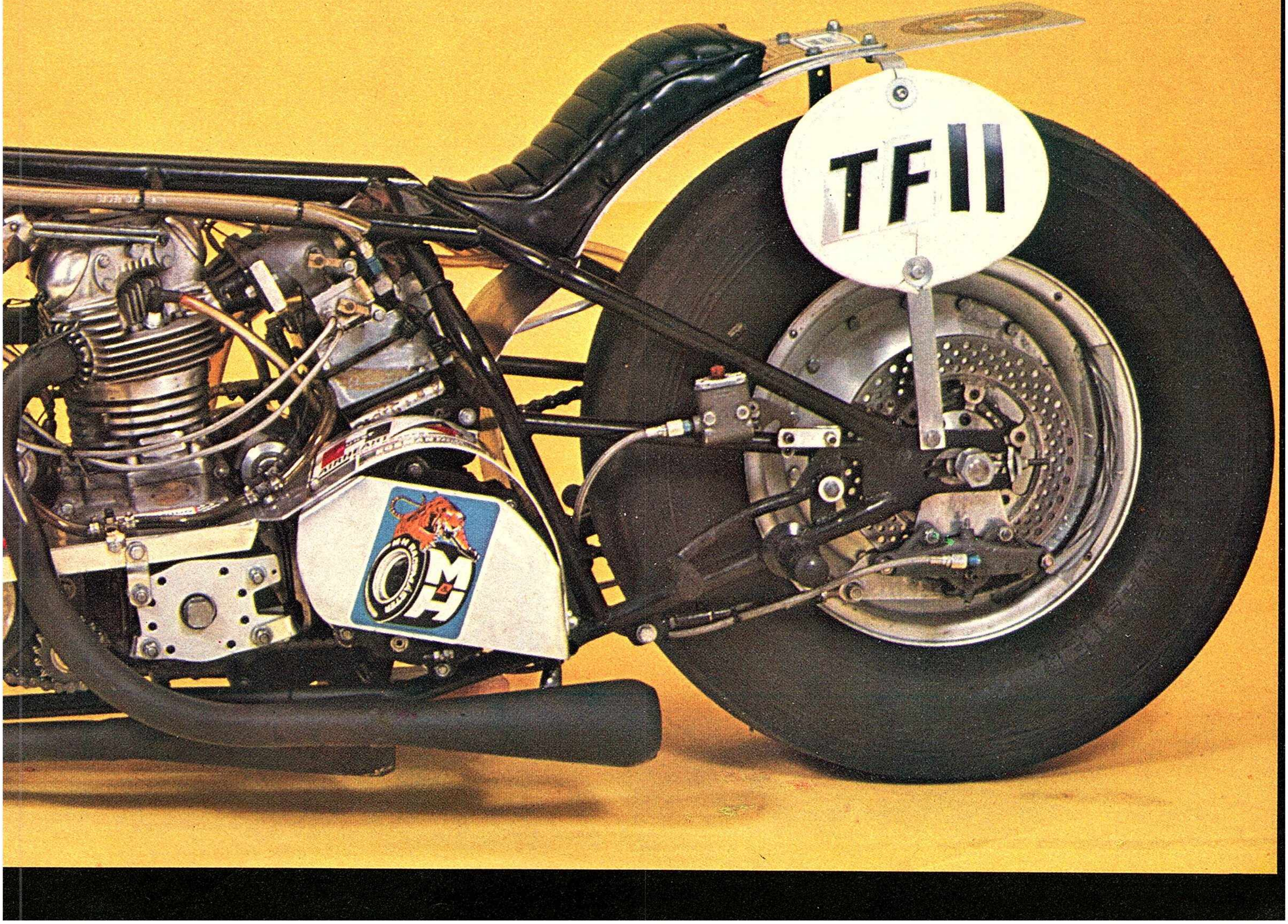


assembly is comprised of a Kimtab mag, an Avon Speedmaster tire and a Ceriani fork; a Cragar rear wheel with a Kosman center section mounts the M&H six-inch slick. Airheart hydraulic disc brakes are used fore and aft.

The bike's 1975 record is impressive in its consistency. It ran 174.48 mph in 8.39 sec. at Pomona's Winternationals, set an 8.49 sec. track record at Bakersfield, an 8.39 sec. record at National Trail in Columbus, Ohio, was runner-up at the Bowling Green meet with times of 8.55—169.17, ran 8.34—174.41 but broke at Englishtown, New Jersey, won the AHRA's bike meet in Kansas City with a track-record 8.65—169.81, won the Indianapolis Nationals for the second year in a row with a record ET of 8.19 and a speed of 176.81; was runner-up at Ontario with best times of 8.02—182.55; and won the Fremont meet.

Joe's bike is the only Top Fueler in history to have exceeded 180 mph in the traps; it is the only one of these three bikes that has not recorded a sub-eight-second ET. The reason is the rear tire. The Christenson-Gregory Norton and the R.C. Engineering Honda both use M&H's new eight-inch rear slick, which wasn't clearly identified as the tire to use in 1975 until Joe's chassis was already complete. The double 74's rear section was de-

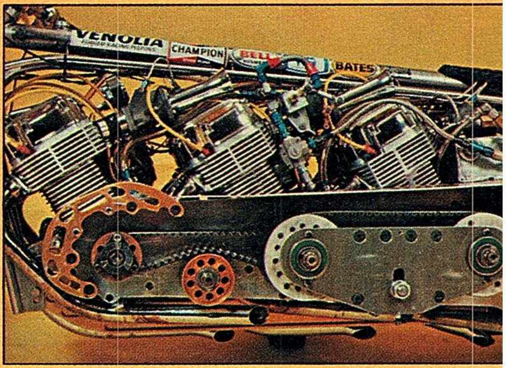
## The Christenson-Gregory double Norton: The Stinger (7.93–177 mph)

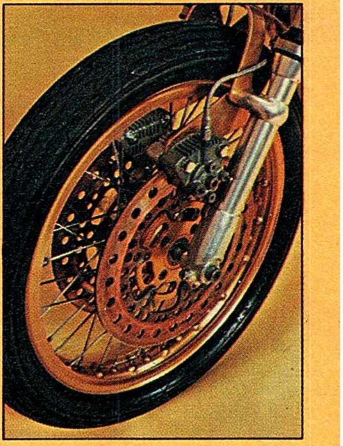


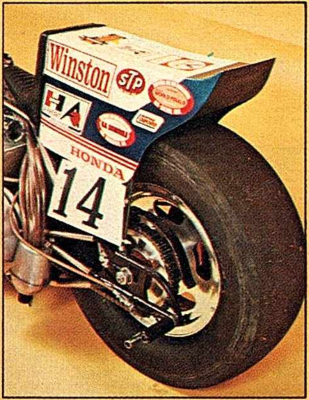
signed to accomodate a six-inch tire; that is all it accommodates.

"ETs of 7.50 to 7.60; trap speeds over 190 mph. That's what it'll take in 1976. I'll even say I'm gonna do it." To get where he wants to be next season, Joe is currently building an all-new motorcycle. Because of the limitations of his current chassis, Smith has had tire limitations too. The new chassis will be wide enough and stout enough to accept an 8-in. rear tire; with the big tire Joe can go back to using his 108-in. engines, which were simply too strong for the 6-in. M&H. Other changes will include the B&J trans, an MTC rear wheel and a Crower clutch. Much will stay the same: carburetion, Champion N64Y (or N63Y, or N65Y) spark plugs, an 87% nitro brew (mixed exclusively by his wife Pat), Torco oil, Webcam cam shafts, Joe Hunt magnetos. He'll win a lot of meets in 1976, for the same reasons he won a lot in 1975: his equipment is powerful, tough and reliable; he's a superior rider; and as a rider and as a designer/mechanic, Joe Smith doesn't make many mistakes.

The double-engined Norton of John Gregory and T.C. Christenson is in many ways the antithesis of Smith's bruiser. The Harley's displacement is well over 200 cubic inches; the Norton displaces well under 2000 cubic centimeters. Joe uses carburetors; the Norton breathes through fuel injectors. The double Harley is moderately heavy at 525 lbs.; the Norton is exquisitely light at 450 (and so is its pilot, who weighs 125). The Harley presents itself as a rock-crusher; the Norton beguiles. The Monster-Glide looks like it ought to be a jet, and is. The Norton looks like it ought to be a stone, and isn't. The Harley revs at 6000; the Norton, 8000. The Harley engines are vintage 1975; the Nortons were born more than a decade earlier. Smith bought his transmission from Lenco and modified his clutch; John Gregory and T.C. Christenson *manufactured* their clutch and built their two-speed trans out of a Rambler overdrive unit. Joe's bike uses 87% nitro; the Norton has to cope with a steady diet of 95% nitro, 2½% propylene oxide (a truly nasty chemical used as an igniter that was originally compounded to control the growth of micro-organisms in foodstuffs) and 2½% methanol. Much potential remains in the double Harley; the Norton is completely strung out and facing retirement (to be replaced by a Norton triple, about







## Russ Collins' Triple Honda: The Mighty Wurlitzer (7.86 - 179 mph)

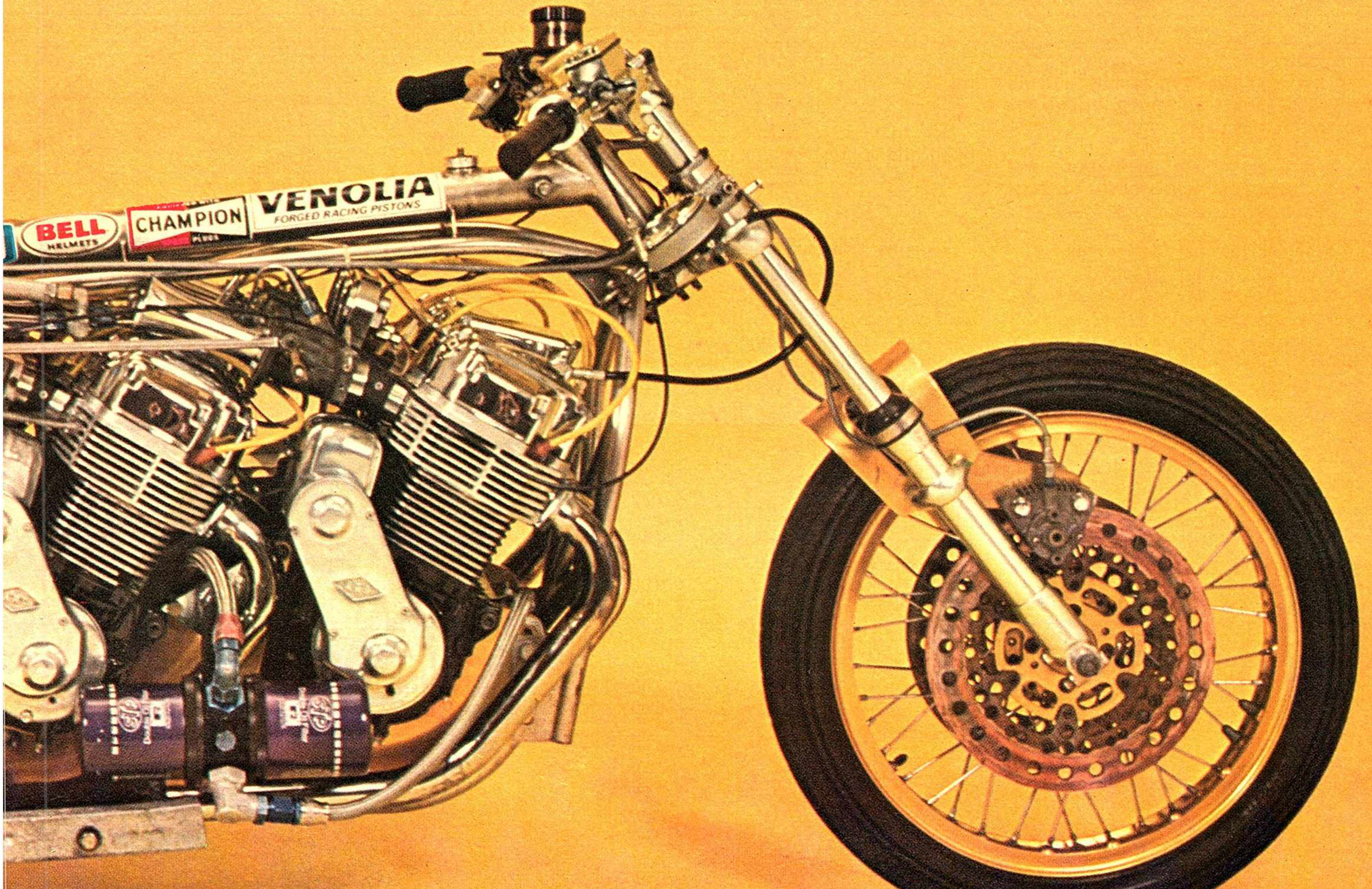
which more later).

Brilliant as the little bike has been all season long, it truly came into its own at the Ontario SuperNationals. The triple Honda set a new ET record, which it has been capable of doing for some time; Joe set a new speed record, which he has done frequently in the past; but the Norton won, with a brilliant string of seven-second passes (7.99—175.78, 7.93—175, 7.93—176, 7.95—175) that would be nearly impossible to match for consistency.

Consistency almost always wins drag meets, and the Norton guys are almost always consistent. Their 1975 record, briefly: they won the AMDRA Memphis meet on May 5; won a match race series in Cincinnati, with the day's top speed and low ET, on May 24; qualified quickest at the June 15 Bowling Green meet; qualified quickest at the July 11 NHRA SummerNationals meet in Englishtown; won the AMDRA Cincinnati meet on July 20; won a match race series in Canada on August 5, and another one in Cordova, Illinois on August 22; set an unofficial motorcycle ET record (8.02) and finished in the runner-up slot at the Indianapolis Nationals on September 1; set a new European record and won the match race series at Santa Pod, England on September 21; won another match race there the following weekend; won the Atco AMDRA meet (for the fourth time) on October 5 after qualifying with the meet's quickest ET and fastest speed; won the Ontario meet for the third time with a stream of sevens; and picked off Irwindale with a last round shot fully two tenths quicker than the day's previous best Top Fuel ET.

If Joe Smith's Harley-Davidson worships displacement and Russ's Honda is a monument to complexity, the Norton is a serenade to technology. It would have to be, when you consider that it is powered by such little old engines. They displace 810cc; the cylinders, heads and pistons are all heavily-reworked Dunstall items. The top two cylinder fins have been shaved, welded together and filled for more support for the Grade 6 head bolts, and the heads were 0-ringed to solve a persistent leakage problem. The combustion chambers are full-hemis with

# THESE THREE



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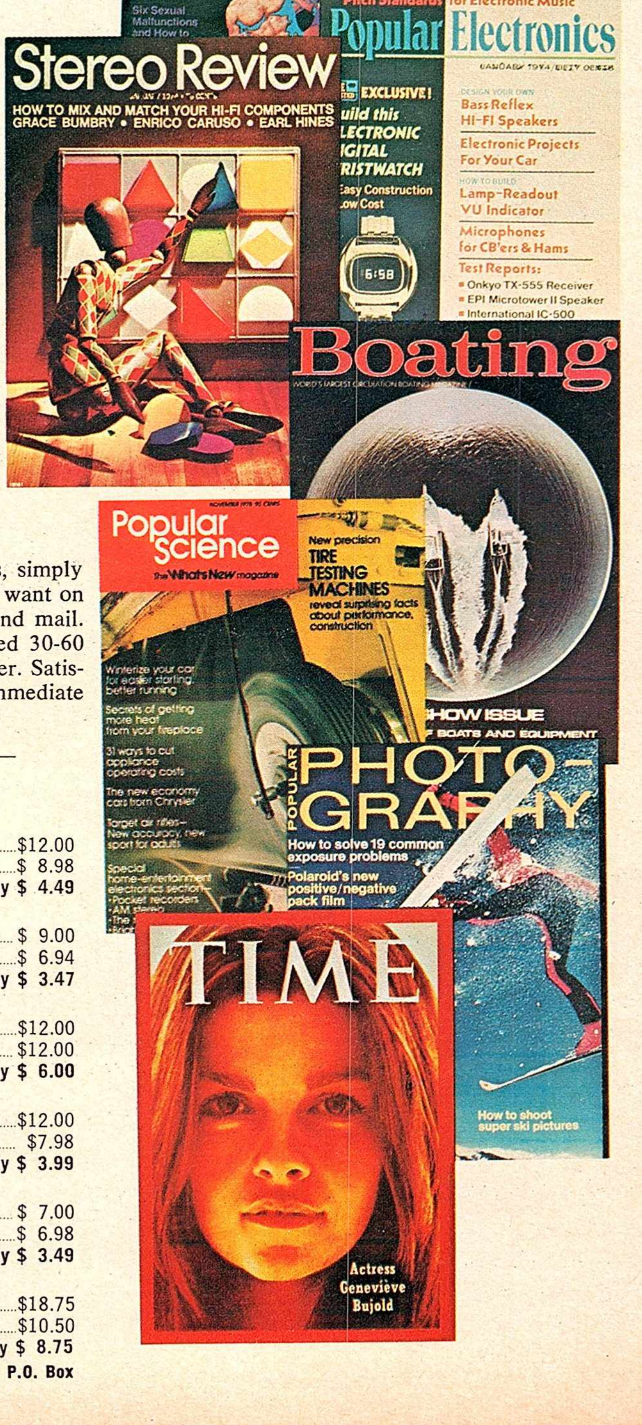

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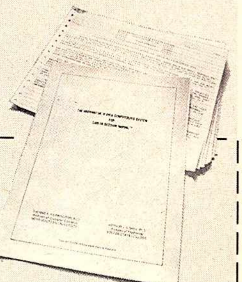

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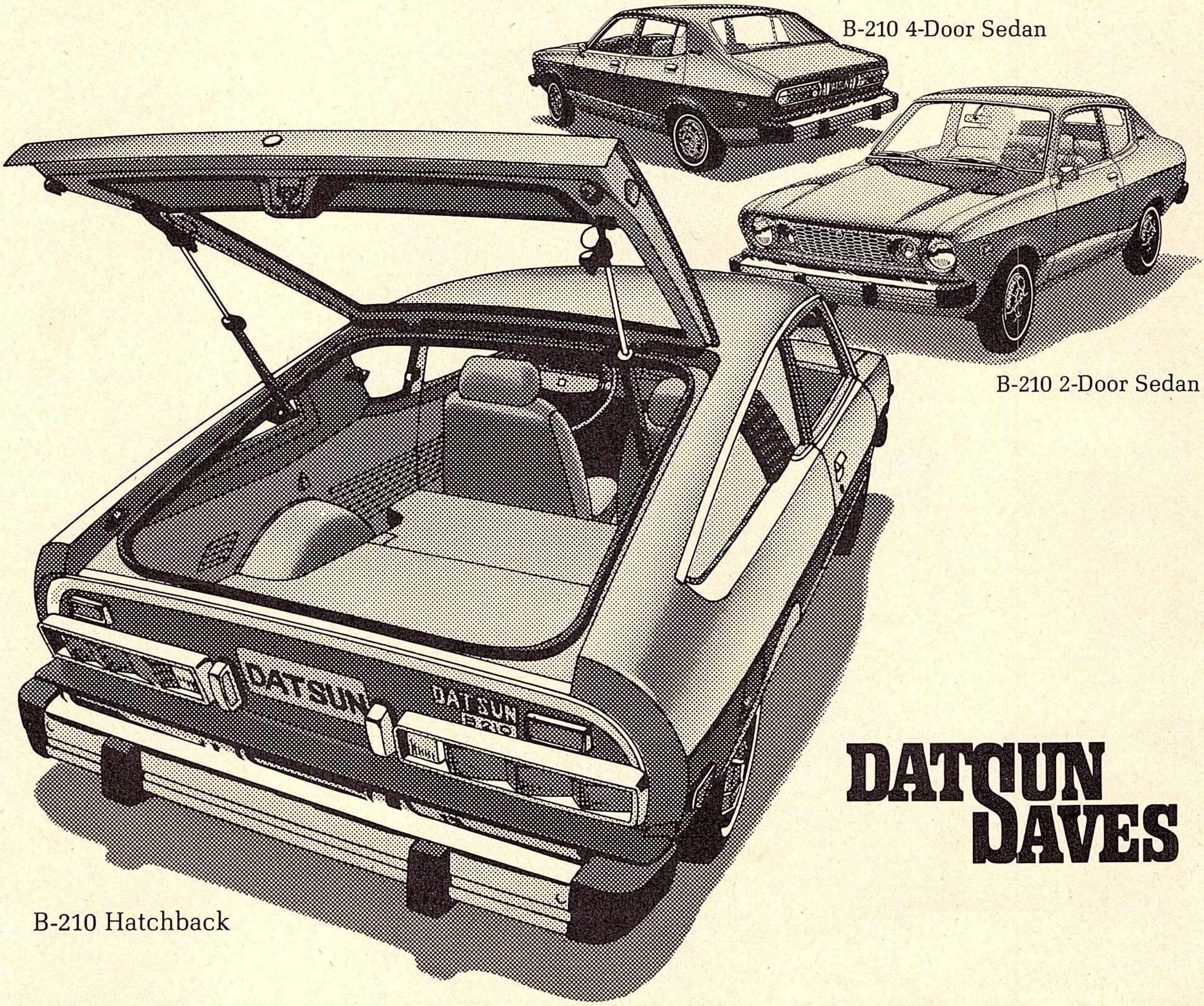

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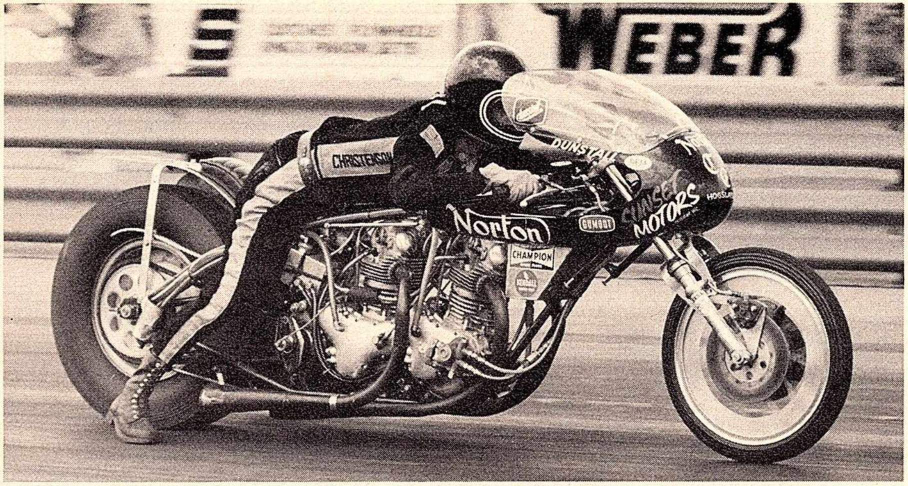


# THESE THREE

1⅝-in. intake valves and 1 7/16-in. exhausts, and the intake valve angle was changed by Dunstall from 28 degrees to 26½ degrees. Intake ports measure 33mm. Pushrods, valve springs, cams and titanium collars all come from Norris. The cams produce .438-in. of valve lift.

The specifications of the Norton's lower ends are confounding. Gregory uses standard, unpolished connecting rods, standard rod bearings fitted up with .0005-in. extra clearance, and a pair of stock (although thoroughly massaged) early Sixties Atlas cranks. The crank journals' oiling holes have been cross-grooved for better lubrication. The cranks have been rebalanced to a 92% factor by Ray Belluci, and lightened by 5½-lbs. each. In two seasons of racing the lower ends have never given trouble—and *these* lower ends have to contend with 150bhp each. Before Gregory and Christenson made their own Teflon oil seals, the Norton was good for five or six runs on a set of lower-end bearings. The nitro-proof seals bumped that figure up to 25 runs, and the combination of the trick seals and Kendall Nitro 70 oil now protects the lower ends for a season or more.

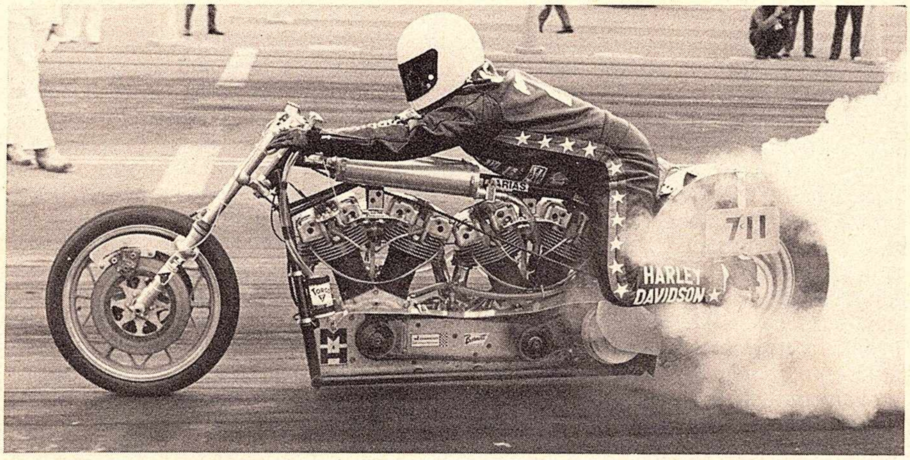
There are three specific areas of high-level technology on the Norton: the induction system, the drive train and the chassis. Induction is handled by a fuel injector (Hilborn #105 04A) from a midget Offenhauser, cut in two and adapted to the Norton's cylinder heads with home-made manifolds. The Hilborn BL630 pump drives off the front engine's cam shaft and is rated at 3.4 gallons per minute. Three lines come from the pump: one goes to a #57 Hilborn metering valve, one returns to the tank through the high-speed jet (known as the "pill"), and the last bleeds pressure back to the tank when the throttle is closed at high engine speeds; it is intended to keep the injector pressure from blowing the lines off the bike at the end of a run. The relief is set to open at 37 psi at 6000 rpm.

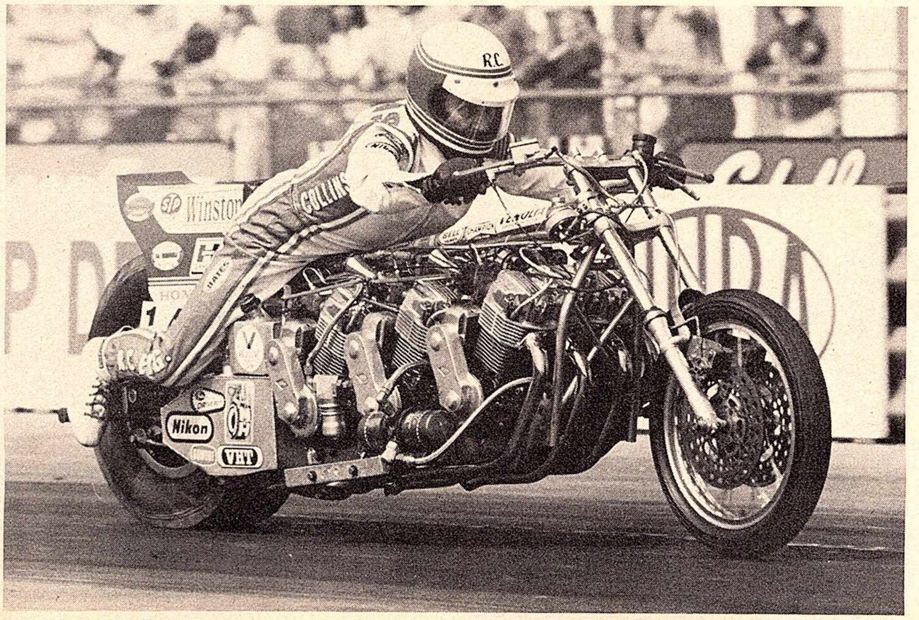
The metering valve, which regulates the amount of fuel going down the intake ports in response to throttle opening, was fitted with a special low-speed bypass system when Gregory installed a larger pump two years ago. They were finding that under heavy air conditions, the original pump wasn't doing the job. But if a larger pump were added it would overfeed the engines at low speeds—thus the metering body bypass.

"Injection can be dialed in much, much closer than carburetors," Gregory says. "When the injectors are off by 8 or 10%, they're still better than carbs, and when the injectors are right, there's absolutely no comparison."

Christenson and Gregory were the first to try an automotive-type slipper clutch, the first to try an automotive-type two-speed transmission and the first to use an eight-in. tire. The clutch is completely of their manufacture; they made the patterns, machined the castings and contracted with a stamping company to fabricate the plates. (The clutch is also used by Danny Johnson and Marion Owens.) The two-speed, fabricated before Lenco began supplying transmissions to motorcycle people at the request of Sonny Routt, is a classic example of American hot rod thinking, coming from an unlikely place (a Rambler, of all things) and doing an unlikely job.

The chassis was built in 1972 because of Christenson's and Gregory's desire for a wider (8-in.) rear tire, a lower, lighter bike and then-revolutionary drive line components. The drive line, which had earlier located the clutch and transmission input and output shafts on the bike's left side, was rearranged so that the output shaft drove off the bike's right side. This more balanced division of mass permitted Gregory to remove 40 lbs. of ballast





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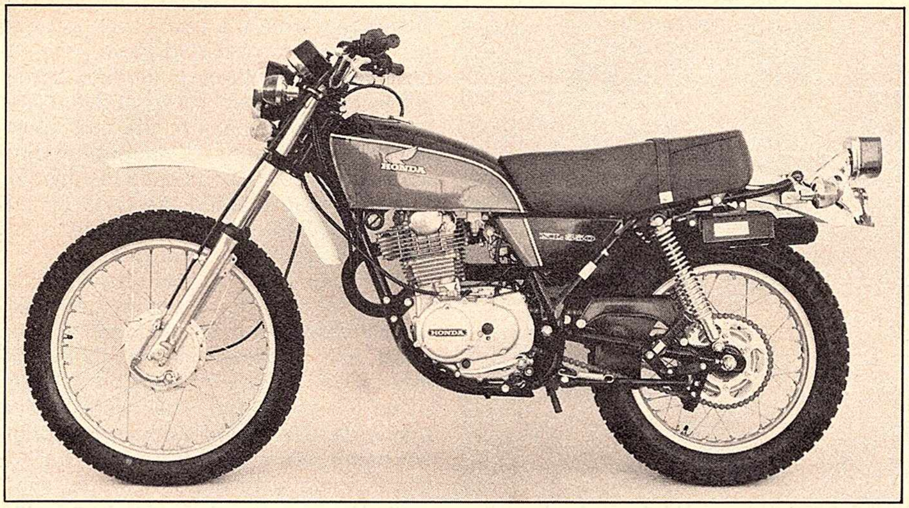
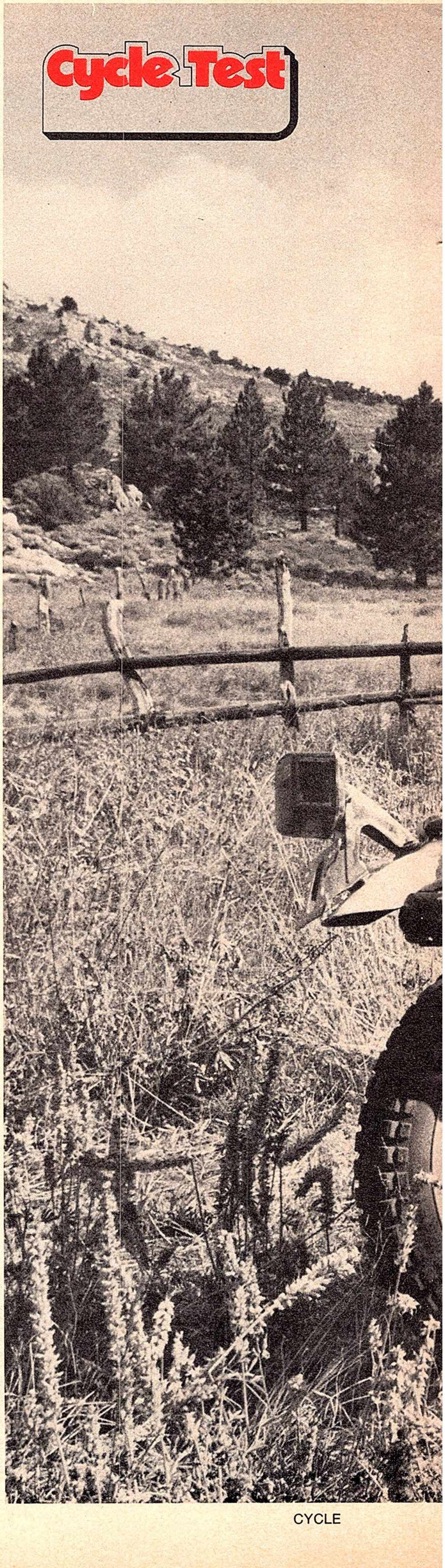


Cycle Test



Because Honda feels compelled to obey Federal noise and emission laws, the XL 350 has lost its thump, sprung the scale and become complicated. But there's still something about a four-stroke single. . .

● This motorcycle and others like it are struggling for identity. Now that a serious off-road rider can choose from close to 20 true enduro bikes, he won't consider a dual-purpose street-trail machine like the XL 350 because its dirt performance has been thrust into obsolescence by the enduros. Nor will the average street enthusiast buy a bike with bumpy tires, steel pegs and no electric starter, What is to become of these machines that have served us so well since Yamaha's DT-1 Enduro popularized the whole dual-purpose concept in 1967? Has evolution's pitiless march left the dual-purpose bikes on the fringe of extinction?

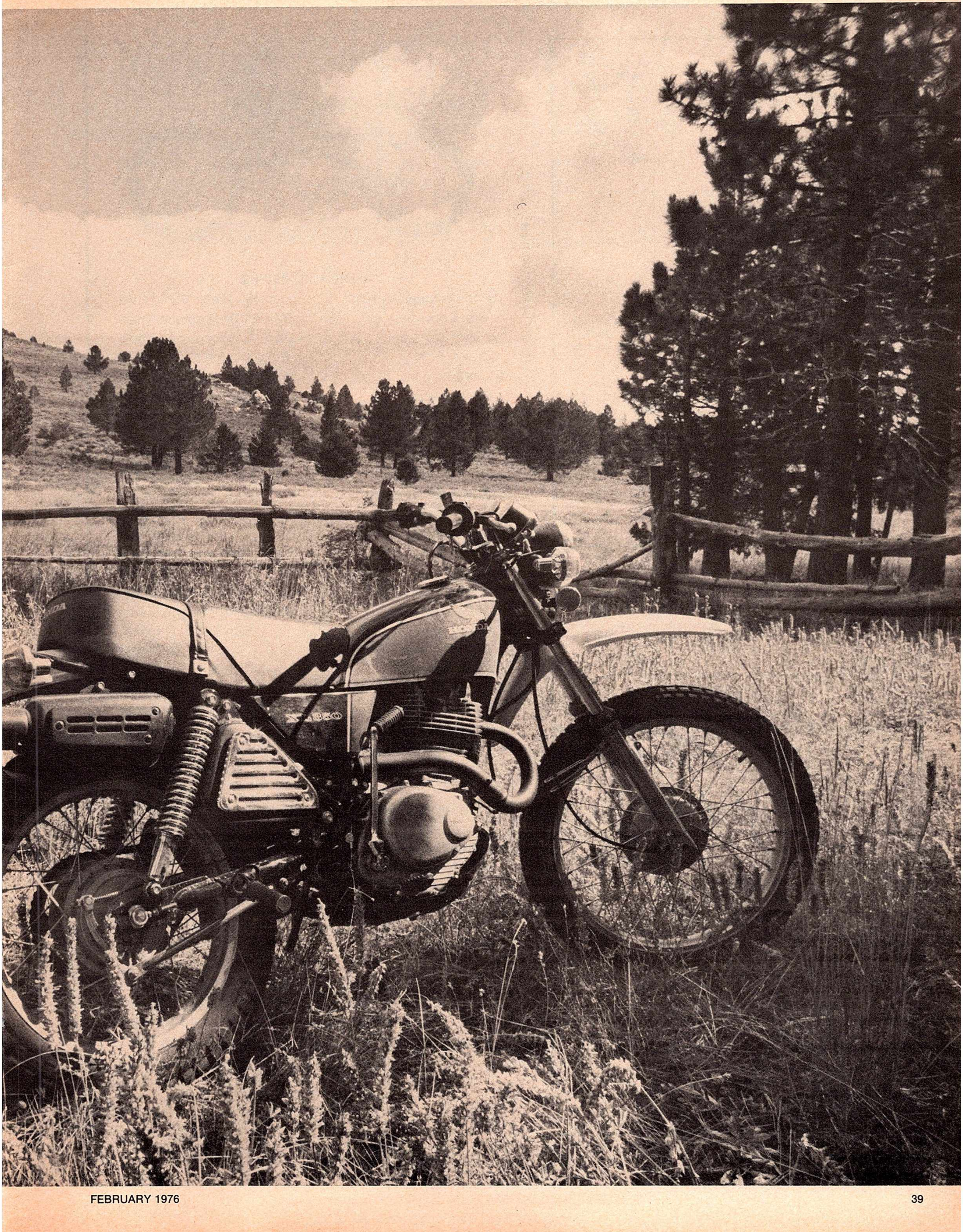
Not at all. As long as enough people want to ride both street and dirt and can't afford separate machines for each, the dual-purpose market will remain strong. In some cases sales will be stimulated by strict enforcement of licensing laws which prevent non-street-legal machines from utilizing popular riding areas. But never again will the dual-purpose market be as large as it was when true enduros were much more expensive and not that much better. Today's enduros are closer in price to dual-purpose machines, and vastly superior in performance. Bultaco Fronteras, Ossa Pioneers, Montesas, Pentons and MR Hondas are suddenly a major cause of unsold street-trail bikes.

In evaluating dual-purpose machines (which are basically all street-legal trail bikes from Japan), we cannot compare their street performance to that of a street bike or their dirt performance with an enduro's. This approach would leave little favorable to report, because performance gaps have become so wide. References to specialized machinery must be used for perspective only, not comparison.

The reasons for performance gaps are twofold. First, while enduros are ignoring street-legal considerations, dual-purpose bikes have been conforming to tougher and tougher Federal noise and emission standards. A huge labyrinthian airbox system on the XL 350 has enough passages and compartments to make a whole family of New York sewer rats feel at home. A correspondingly complex exhaust system meets noise levels but adds 15 pounds to the bike's weight. Don't blame Honda for these power-robbing features (that result in a 331-pound tractor that won't handle brisk speeds in the dirt); blame the laws. Machines that adhere to these laws will never perform off the road as well as those that don't.

Secondly, a performance gap exists because Honda builds the XL for the average rider. Therefore it can't be expected to dance through rocks and surprise the dynamometer. That takes a spe-

# HONDA XL 350 K2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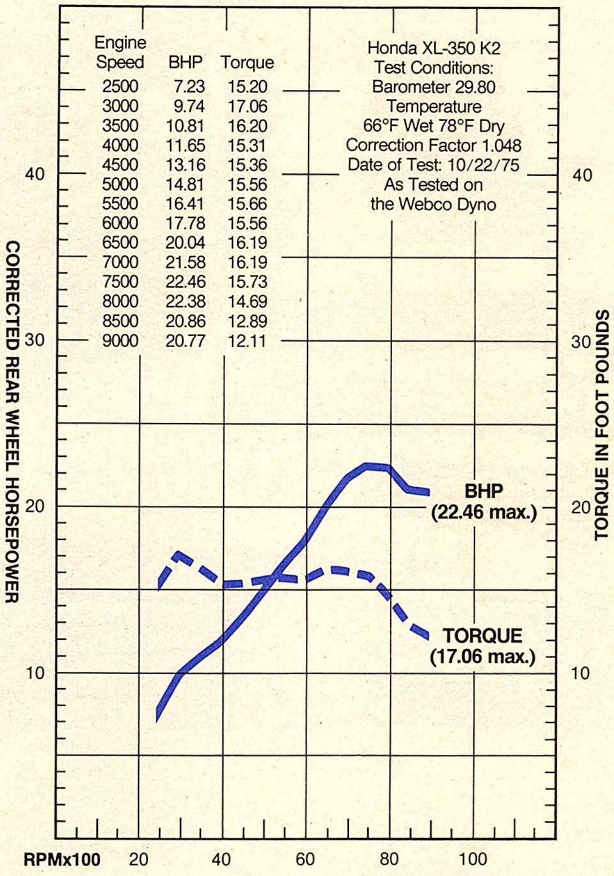
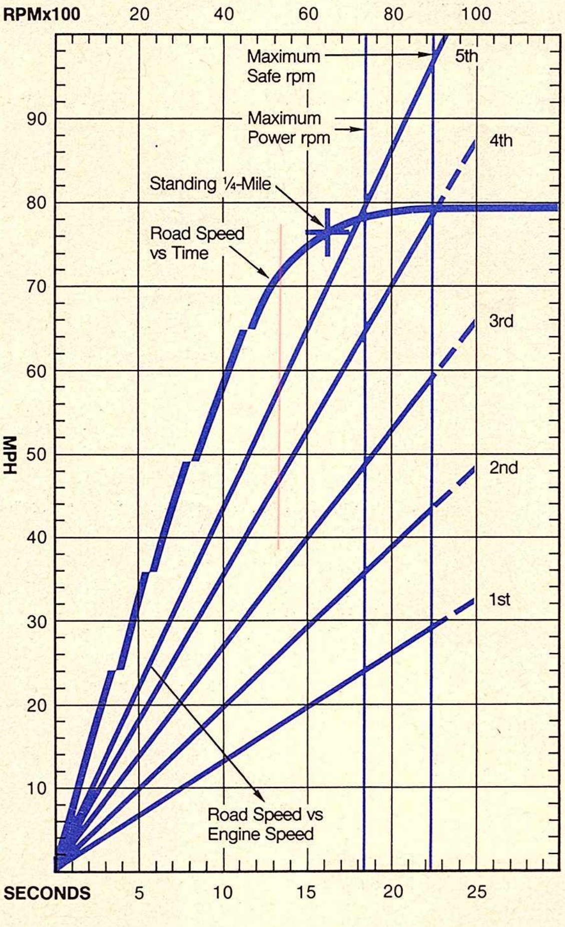
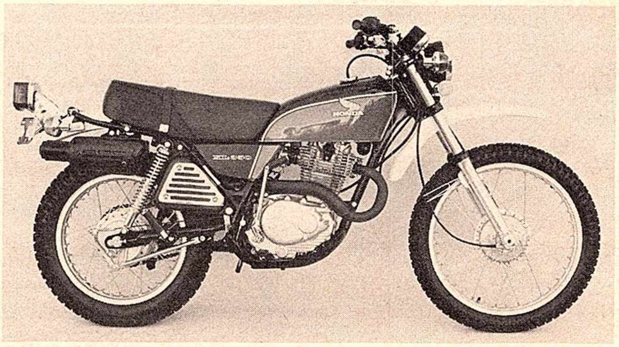


| Engine Speed | BHP | Torque |
|---|---|---|
| 2500 | 7.23 | 15.20 |
| 3000 | 9.74 | 17.06 |
| 3500 | 10.81 | 16.20 |
| 4000 | 11.65 | 15.31 |
| 4500 | 13.16 | 15.36 |
| 5000 | 14.81 | 15.56 |
| 5500 | 16.41 | 15.66 |
| 6000 | 17.78 | 15.56 |
| 6500 | 20.04 | 16.19 |
| 7000 | 21.58 | 16.19 |
| 7500 | 22.46 | 15.73 |
| 8000 | 22.38 | 14.69 |
| 8500 | 20.86 | 12.89 |
| 9000 | 20.77 | 12.11 |



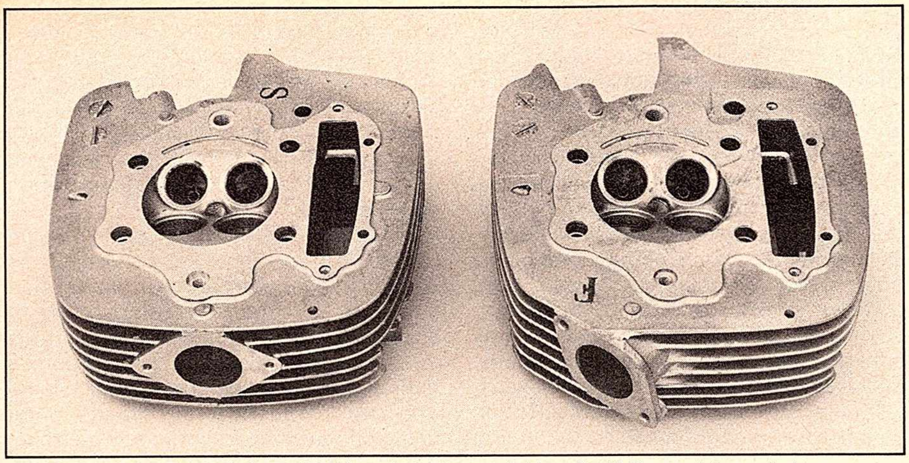


## HONDA XL 350 K2

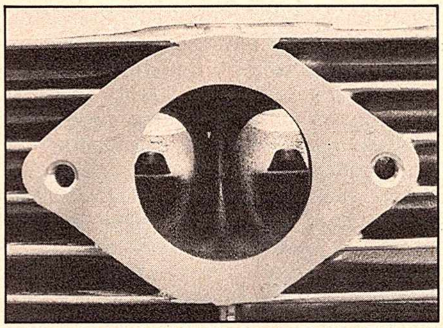
| | |
|---|---|
| Price, suggested retail | $1192 West; $1201 East |
| Tire, front | 3.00 x 21 Bridgestone Trials |
| rear | 4.00 x 18 Bridgestone Trials |
| Brake, front | 6.1 x 1 in. (155 x 25.4mm) |
| rear | 5.5 x 1 in. (140 x 25.4mm) |
| Brake swept area | 36.5 sq. in. (235 sq. cm) |
| Specific brake loading | 13.4 lbs./sq. in. at test weight |
| Engine type | Four-stroke OHC single |
| Bore and stroke | 79 x 71mm |
| Piston displacement | 348cc |
| Compression ratio | 8.5:1 |
| Carburetion | 1; 32mm; Keihin |
| Air filtration | Oiled polyurethane foam |
| Ignition | Magneto |
| Bhp @ rpm | 22.46 @ 7500 rpm; actual |
| Torque @ rpm | 17.06 @ 3000 rpm; actual |
| Rake/Trail | 32°/5.5 in. (140mm) |
| Mph/1000 rpm, top gear | 10.6 mph |
| Fuel capacity | 2.5 gal. (9.5 liter) |
| Oil capacity | 2 qts. (1.9 liter) |
| Electrical power | 80 watts @ 5000 rpm |
| Battery | 6V, 6AH |
| Primary transmission | Spur gear 3.13:1 |
| Secondary transmission | ⅝ x ⅜ D.I.D. chain 15/45 3.0:1 |
| Gear ratios, overall | (1) 23.45 (2) 15.62 (3) 11.63 (4) 8.73 (5) 7.03 |
| Wheelbase | 55 in. (1397mm) |
| Seat height | 34 in. (864mm) |
| Ground clearance | 9.3 in. (236mm) |
| Curb weight | 331 lbs. (150 kg) |
| Test weight | 491 lbs. (223 kg) |
| Instruments | Seiki tach and speedo with odometer & trip meter resettable both ways by 10ths |
| Standing start ¼-mile | 16.345 sec.; 76.33 mph |
| Average fuel consumption | 40-44 mpg |
| Speedometer error | 30 mph actual 29.47<br>60 mph actual 53.85 |

PHOTOGRAPHY: DALE BOLLER

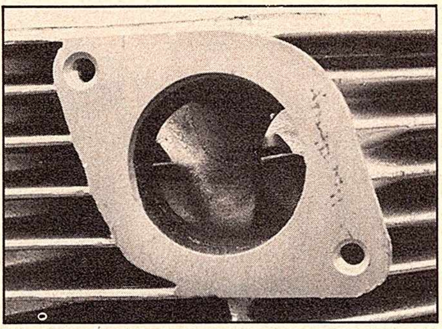
# HONDA XL 350 K2



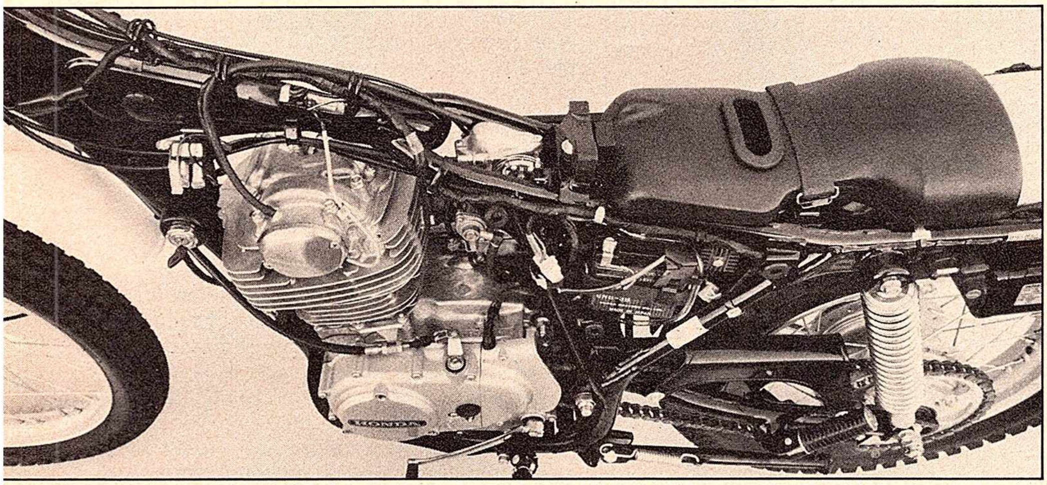
New head at left differs only in straight-through intake manifold, so it will fit on existing cylinders.



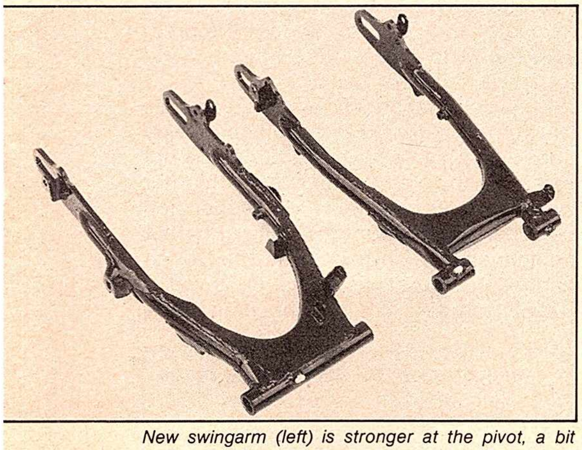
Tuners will be able to get much more power from XL engines because of the center intake location.



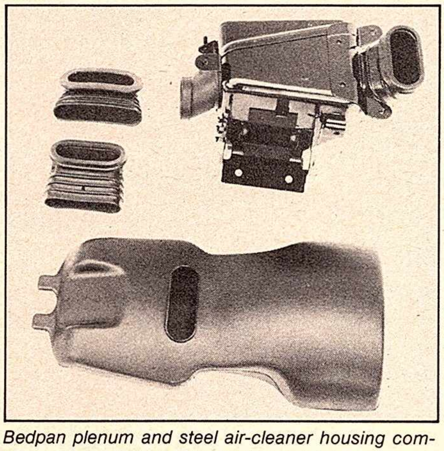
New head on left has only the two valve stems to interrupt flow. An angled entry obstructs old head.



Giant outer plenum is needed to quiet intake drone but the seat has less foam and is harder as a result.



New swingarm (left) is stronger at the pivot, a bit longer and bracketed for folding passenger footpegs.



Bedpan plenum and steel air-cleaner housing combine with rubber snorkels to damp intake noise.

cial long-travel suspension and a narrow powerband, neither of which the casual trail rider will miss on the Honda. If you want a serious Honda dirt bike, buy an MR or a CR Elsinore. The XL is for people who want what it delivers, which is excellent street suitability for a dual-purpose bike and for the most part acceptable performance off-road. In the case of the engine, off-road performance is outstanding because of good old four-stroke torque and reliability.

The Honda is geared for 79 mph and this is exactly what the speedometer reads with the engine spinning at redline, but it takes a slight downhill to do it. On level ground acceleration quits at 75 mph. Vibration becomes intrusive at 65 mph, so cruising at the speed limit is more comfortable. There's no question that the XL 350 Honda is the best street performer of all the dual-purpose bikes, primarily because of the engine's steadfast reliability, long life and ability to stay crisp with very little maintenance.

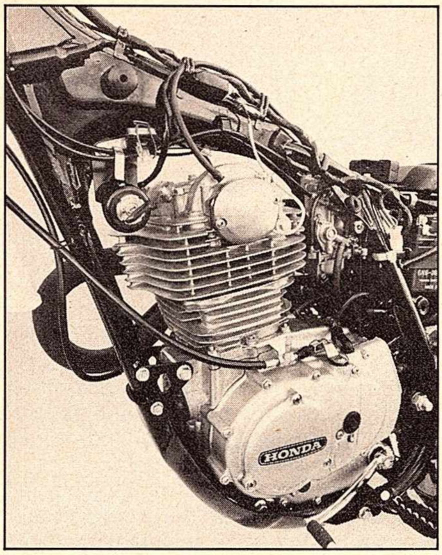
On a long desert road far from civilization and marauding patrol cars, we set the tachometer on 9000 revs and left it there for 15 minutes. The Honda never flinched during the ordeal and settled into a quiet idle afterwards. Certain two-strokes could do the same, but you wouldn't feel comfortable trying it. No two-stroke can perform one of the Honda's easiest tricks—and that is to slog up a deep sandwash with the engine at its torque peak. As temperatures rise power sags a little, but in a two-stroke the *piston* would sag under similar conditions. The Honda engine is abuse-proof, and that feature alone firmly seats the XL on top of the dual-purpose street heap.

It's also not a bad handler on pavement. With no ground clearance problems and neutral steering, you can pitch off into a corner more vigorously than you might expect with trials tires. Posted speed limits on mountain roads seem slow aboard the Honda. Quiet operation, comfortable seating and silky controls make the XL 350 agreeable to ride in the city, though not inspiring. It's a 45-mpg transportation workhorse, but nothing that will snap heads or outpower a Corvette.

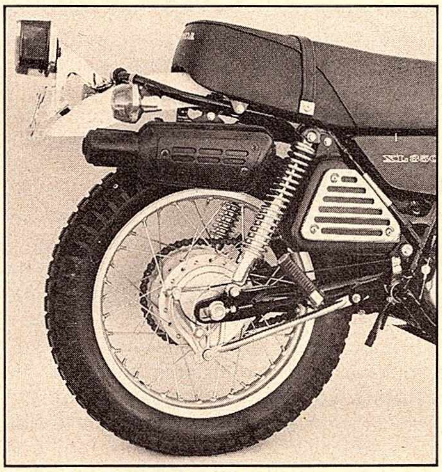
People who can't tolerate vibration had better forget the Honda, because a buzz of varying severity and frequency is always there. But it's not totally intrusive. If you start enjoying the scenery, you won't notice vibration until you purposely think of it again. The same applies to drive-train slop, which makes the whole bike jerk when the throttle is turned off or on. You learn to minimize it with smooth throttle movements and careful shifting.

In dirt the motorcycle is severely limited by overall weight, poor shocks and trials tires. Its wet weight of 331 pounds is 12 more than last year and about the same

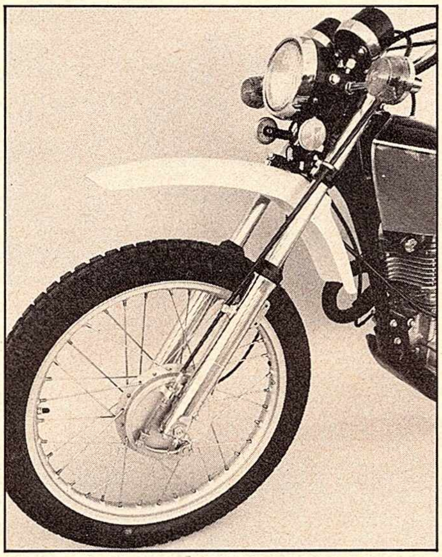
# HONDA XL 350 K2



*A steadfast engine is surrounded by a maze of wires and tubes which discourage owner maintenance.*



*Remember the 1968 Bultaco Matador? If you do, this exhaust system will look familiar. It is ultra quiet.*



*Changes in geometry improve steering accuracy considerably, but you can't tell without changing tires.*

*This fellow is using the XL 350 the way it should be used off-road—going slowly over smooth terrain.*

as the old 650 Triumph desert sleds which became extinct because lighter two-strokes could fly over rough stuff so much faster. In sand or mud the heavy front end causes the skinny front tire to sink in, and if the bike isn't exactly perpendicular to the ground, the tire plows and you start weaving to stay upright. In back, the shocks are gone in 30 seconds. Bumps and the Honda come together like Sumo wrestlers—the whole earth shakes and the motorcycle must fight to stay shiny-side-up. You could install knobby tires and new shocks and nearly double the bike's off-road efficiency, but the easiest cure is to simply slow down. Resign yourself to the fact that the XL 350 is a trail bike designed to poke around—sometimes with a passenger on the back and sometimes while leading a string of kids on minis. *Where* it can go is not limited; the engine will pull any hill and slug through awful rock sections with wondrous ease. The only limitation is on sheer speed.

A couple of kicks will always start the engine, but they have to be strong ones or you won't make it past the compression stroke. Bump-starting requires lots of speed and solid traction. The engine is quiet enough to idle all night in someone's bedroom without disturbing their sleep. You can't even hear the Honda when riding on the same trail with a two-stroke. A heavy double-muffler exhaust system soaks up the sound and who-knows-how-much horsepower. It looks like the rear muffler can be unbolted, but it can't, because Honda has welded the two silencers together with a connector pipe.

Under the seat, more silencing apparatus shows the complicated equipment needed to quiet intake drone. Honda has more money in plastic injection molds and sheet metal stamps for the XL 350 intake system than some companies have in frame jigs. Endless experimentation must have been involved in the design; what exists wouldn't have occurred to anyone in the first few tries. An upper plastic plenum resembles a hospital bed pan and nestles nicely between the seat and top frame rails. Air enters the plenum through an inward-aimed curved rubber boot and weaves through rubber tubes to another plenum. This one is stamped steel, and contains a wet foam air cleaner just in front of a third rubber boot which leads to the carburetor bellmouth. Not a single decibel escapes. Honda literature describes the new intake and exhaust systems as being "less fatiguing for the rider and the environment."

The Honda got more than quieter for 1976. The frame was highly modified to accommodate a new center-port cylinder head and to improve geometry. A different caster angle results in more rake (32 degrees) and increased fork-crown offset adds to trail (now 5.5 inches). These changes improve straight-line stability and would normally slow down the steering, if a shorter swing arm didn't maintain the same 55-inch wheelbase as before. There's less handlebar wag with the new geometry and you can run less tire pressure (down to 12 pounds) without losing touch with the front end.

Chassis components are the same as last year. Superb D.I.D. rims lace to alloy hubs which contain a good brake in front and a slightly grabby one in back. Lighter wheels would help the XL's suspension considerably, but the durability of heftier components is more important to Honda and their dealers than exotic parts which weigh less and wouldn't be noticed by

*To see how an XL 350 can be made into an off-road terror capable of winning Baja or "Best Custom" at the local Motorama, turn to page 44.*

most buyers anyway.

The front fork is satisfactory as delivered, although the recommended 170cc of fluid is too much to allow air in the system to expand harmlessly when hot. Instead the fork pumps up, and the result is diminished travel and stiffer action. The cure is to drain 20–25cc of fork oil.

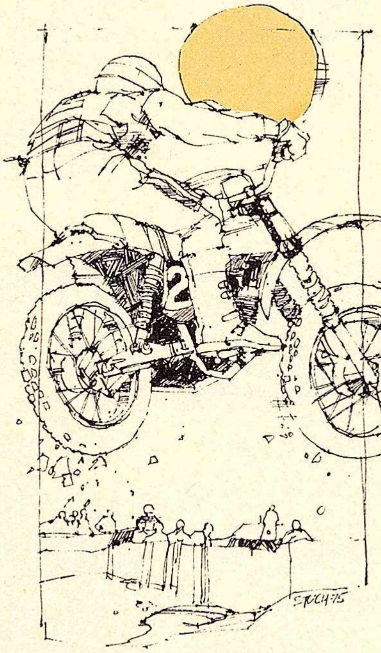
In back, the shocks keep the fender from resting on the wheel and not much else. All the evils of fluid dynamics plague the feeble Showas: cavitation, aeration, heat retention and ill-designed damping which tries to force too much fluid too quickly through a too-small orifice. On the street, piston speeds aren't enough to deteriorate shock action and it can be labled "passable." If you're going to ride off-road, even at casual speeds, pitch the Showas and install S&Ws or Konis.

Other running gear components are excellent. The best steel pegs in motorcycling are joined this year by rubber-covered buddy pegs with a unique lattice on the right side to prevent the passenger's foot from tangling with the chain. In riding two-up in the Pasadena Fire Department's Hook and Ladder Enduro (a family event not characterized by speed), *Cycle* finished fifth in the buddy class, but our 99-pound lady passenger was enough to bend the flimsy rear pegs. Obviously they need to be stronger. New plastic fenders this year are wider and deeper for better control of mud. New tank styling and paint alter the bike's appearance considerably by pulling it farther away from the traditional look.

Due to its street-legality, the XL is decorated with all kinds of lables, buttons and indicator lights, but none compares to the extravagance of a little window in the speedometer face which tells whether the trip mileage indicator is on or off. The bike needs that like J. Paul Getty needs Social Security. If Honda had just spent that extra money on shock absorbers. . . .

There's no question that the bike's finest component is the engine. Webco has tested more than 120 motorcycles on their dynamometer and never recorded a flatter powerband. Maximum torque of 17.06 foot pounds is registered at the incredible low engine speed of 3000 rpm. Torque stays between 15 and 17 foot pounds all the way up to 7500 revs. In the field, this flat torque curve just about eliminates the need for shifting. A twist of the throttle moves the bike ahead with authority regardless of engine speed or terrain. Though maximum horsepower (22.46 at 7500 revs) is certainly not much for a 350, the engine's spacious powerband and tractability make up for any lack of high numbers. Only the slowest, roughest sections require clutch-slipping. No engine would be easier to live with off-road unless it was electric.

The Honda's engine is an overhead-cam four-valve single with a five-speed gearbox. Changes this year include the high pipe, the new air intake system and a major modification to the cylinder head which locates the carburetor directly in line with the two intake valves rather than off to one side. The center port location improves breathing—but the resultant horsepower increase is nullified by restrictions in the quieter intake and exhaust systems. The straight shot will help tuners extract more power from the new head because the intake tract is now equidistant from both valves. Before, the charge followed the shortest, or inside, line through the curved manifold, so most of it passed through the right-hand valve. This reduced the effectiveness of the second valve. We surmise that the side port was originally designed to provide easy access to the carburetor and free up room directly behind the engine for frame tubes. Honda probably rearranged the port to exploit the engine's full racing potential and help offset the effect of power-robbing noise and emission standards. The carburetor's more hidden location won't make much difference to the average buyer, because it functions so perfectly that he'll likely never have to touch it.



This is typical of the whole motorcycle. Other than filling the tank, an owner doesn't have to touch anything. He just rides. If he cleans the air filter once in a while and drains the oil occasionally, the XL 350 will outlast his car. That's a good thing, too, because the bike is complicated for a four-stroke single. Pull off the tank and there's a multitude of wires and tubes which surround the backbone like jungle vines. There are relays, breathers and zeners. The carburetor has an intricate vacuum-operated diaphragm valve which controls an auxiliary air supply for the idling system to prevent backfiring. How would somebody fix that if the Honda started popping off on Wilshire Blvd? Chances are no one will have to. And the average rider would rather have that kind of reliability than DeCoster-performance accompanied by a demanding personality. All the Honda asks: a little less speed in the dirt, if you don't mind. ◉

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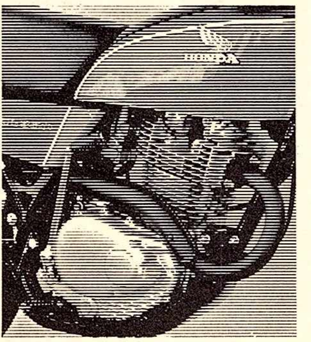
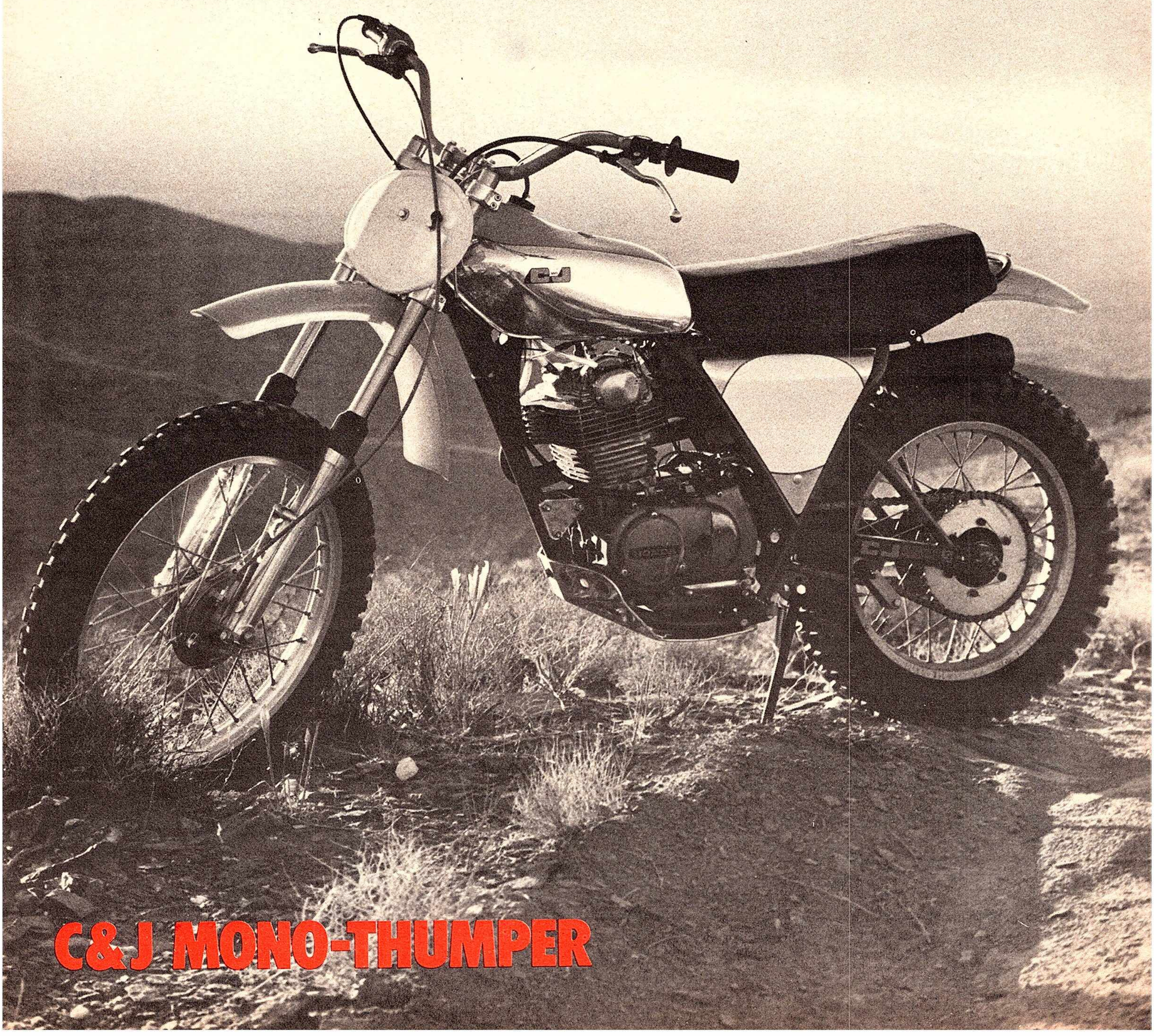


# THE CUSTOM XL

An off-road rider must perform massive modifications to the chassis of his XL 350 to make it suitable for fast dirt riding. The following builders of custom XLs took the Dempsey Dumpster approach to chassis modification, and came up with three very impressive machines.



## C&J MONO-THUMPER

● For C & J Racing Frames of Santa Ana, Calif., a custom frame was the easiest part. They built this bike as a prototype for what is now a stock item in their catalog—an XL 350 Honda frame with Yamaha Monoshock rear suspension. C & J was founded in 1970 by Jeff Cole and Steve Jentges, two former Indy race car builders (the Unsers, Johnny Rutherford), who decided to pack up racing and go into the marine hardware business. Coincidently, Kawasaki's Racing Division moved in next door, and noticed Steve Jentges pounding out a gorgeous aluminum tank for some kid of boat. This was in 1971 just before Talledega, where Kawasaki was planning to use aircraft-type quick-fill tanks to shave a few seconds off pit stops. Jentges' racing bug hadn't been completely squashed, so C & J consented to build the tanks for Kawasaki. In the process they effected a few frame modifications which helped Kawasaki win Talledega. Soon they were working on a frame for Brad Lackey's National Championship-winning 450 Kawasaki motocrosser. Their boating business sunk as Dave Aldana, Gary Scott, Gene Romero, Gary Nixon, etc. all wanted C & J frames. The company built Ossa frames for Bruce Brown and Malcolm Smith as playbikes; they built Evel Knievel's first Skycycle and Bob Gill's jumper; Jeff Ward won the minibike National Championship on a

C & J frame and all of Kenny Roberts' race frames will be built in Santa Ana next year.

Enough for credentials. XL 350 Honda frames are their biggest seller. When a person wants one he explains to Cole, Jentges or Sales Manager Gary Drean exactly what he wants in geometry, footpeg height, suspension, etc., or he can buy an off-the-shelf XL 350 version for $479. Custom prices rise appropriately; the monoshocker pictured here costs $515.

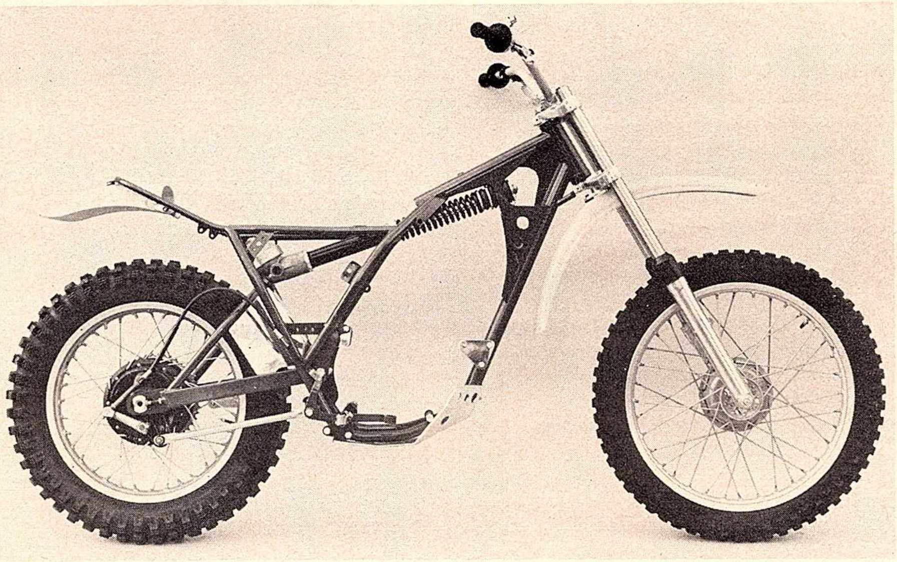
Tubing is TIG-welded chrome moly and fasteners are aircraft-quality in American sizes. Sheet-stock gussets and engine mounts are also chrome moly. Tapered Timken steering head bearings join a spiraled bronze swingarm bush with O-ring seals. All frames locate the swingarm pivot point as close to the countershaft as possible so the chain doesn't have to run dangerously loose with long-travel suspension.

Since C & J operates within the industry on a distributor level, a customer can order parts such as wheels, tanks, seats, complete engines, etc., through them and receive a 20 percent discount on these parts with the purchase of any C & J frame. This helps defray the cost of a custom XL, which can reach $2200 if C & J supplies everything. Assembly is always done by the buyer. In comparison to the cost of a new Penton Mint 400 Enduro—$1880—the custom route suddenly doesn't seem quite so extravagant.

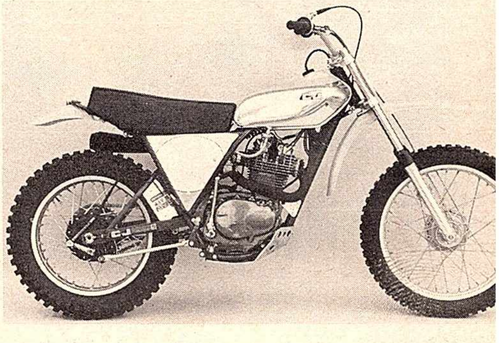
The advantages are numerous. First of all, it's fun. A custom XL builder is delightfully challenged by the number of good chassis components available. Should it be Akront rims or D.I.D.s? Stock spokes or Buchanan spokes? Cheng Shin tires or Metzelers? The Monoshock or S&Ws? How nice to have a white sheet of paper and a stack of catalogs. But it's the engine that provides the greatest advantage to most people. They like four-stroke low-end power and four-stroke reliability. No two-stroke can match the XL's gas mileage. Plugs don't foul, pistons don't seize and even oily Mexican gas doesn't cause pinging. You can do a tune-up with a wrench, screwdriver and feeler gauge. But most of all it's the way a big thumper single feels and pulls. It delivers useable power just about anytime you twist the throttle. With a few modifications the motors will make 30–36 horsepower.

This engine was built by Bill Bell of Long Beach Honda and features 402cc, a Venolia piston, 36mm Mikuni carburetor, special cam and a hand-built pipe which is much too loud. Effectively silencing a hopped-up Honda would add 20 pounds of weight and rob a third of the horsepower gained by hopping it up, so most people run them noisy—and noise is the single biggest problem facing custom XL builders.

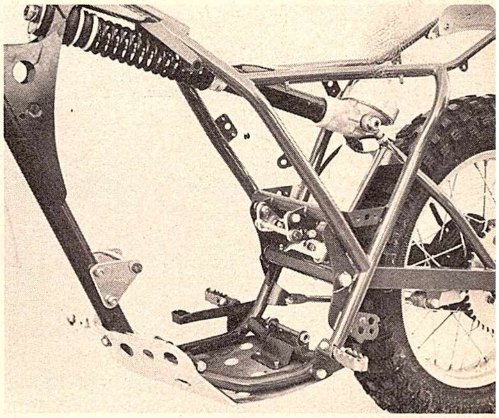
PHOTOGRAPHY: DALE BOLLER, STEVE READY



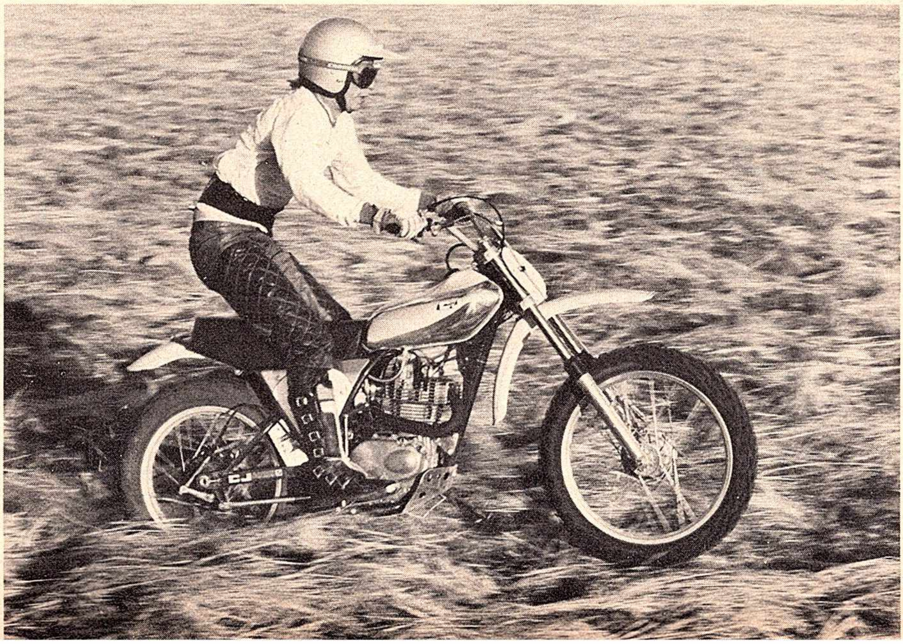
*A dream suspension combination for the C&J custom builder is Yamaha monoshock and Betor fork units. Trim, slim and light, the C&J Honda weighs in at 262 pounds wet. Engine is 402cc big-bore torquer.*

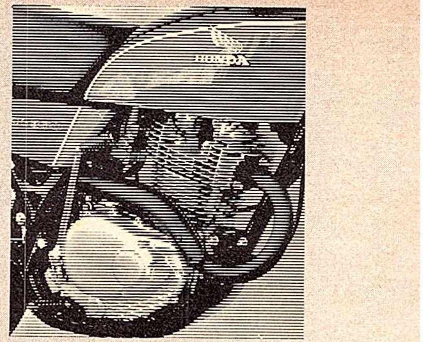


With the polished aluminum YZ tank full of fuel, the MonoThumper weighs 262 pounds—69 pounds less than a stocker. C & J can supply titanium axles and other goodies that knock off more weight, but good geometry, the monoshock and 8-inch-travel Betors work so well that the bike never feels heavy. It will climb any hill and out-gun any stock dirt bike on top end. Its dominant handling characteristic is a willingness to slide—long, pretty, mile-track sweeps around fire-road corners. It's sure-footed and stable in rocks. You will have to spend time matching the spring and damping rates of the front and rear suspensions, but the rest is pure bolt-up playbike. Everybody notices the Honda/Monoshock combination. It's a natural—and it works.



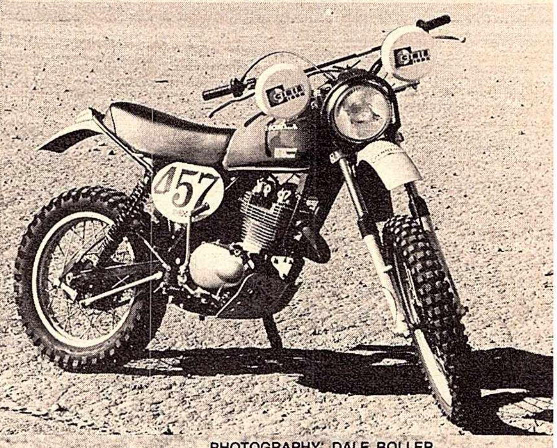
*The entire frame is TIG-welded chrome-moly. This keeps the weight low and the strength high. Chassis geometry is set to individual orders. Improvements in handling and performance justify cost.*





## THE CUSTOM XL

# BELL'S BAJA BULLET



*Bill Bell's Baja winner is dominated by the huge lights which add 30 pounds to overall weight and allow night pilot Al Baker (left) to see 75 yards through tar-like blackness. You can buy virtually the same machine without any lights for $2295.*

PHOTOGRAPHY: DALE BOLLER

● Without question the toughest test of off-road racing machinery is the Baja 1000. This XL 350 Honda beat 34 other motorcycles and 205 high-powered cars in winning the 1975 1000 overall (see story on page 00). Engine maestro Bill Bell of Long Beach Honda built the bike with help from C & J and the S & W shock absorber people. Like C & J, Long Beach Honda is in the business of supplying part or all of the components for custom XLs, but they specialize in high-performance engine parts.

Bell came to Long Beach Honda 14 years ago as a carpenter to build a few work benches. He was a scrambles rider who knew a lot about four-strokes, so they hired him as a tuner when he finished the woodwork. He's been there ever since. In 1968 Bell built the 350 Honda twin that was the only other motorcycle to win the 1000 overall. He has developed XL cams and pipes, big-bore and stroker kits and helped his 18-year-old son become one of the top 125cc motocrossers in the West.

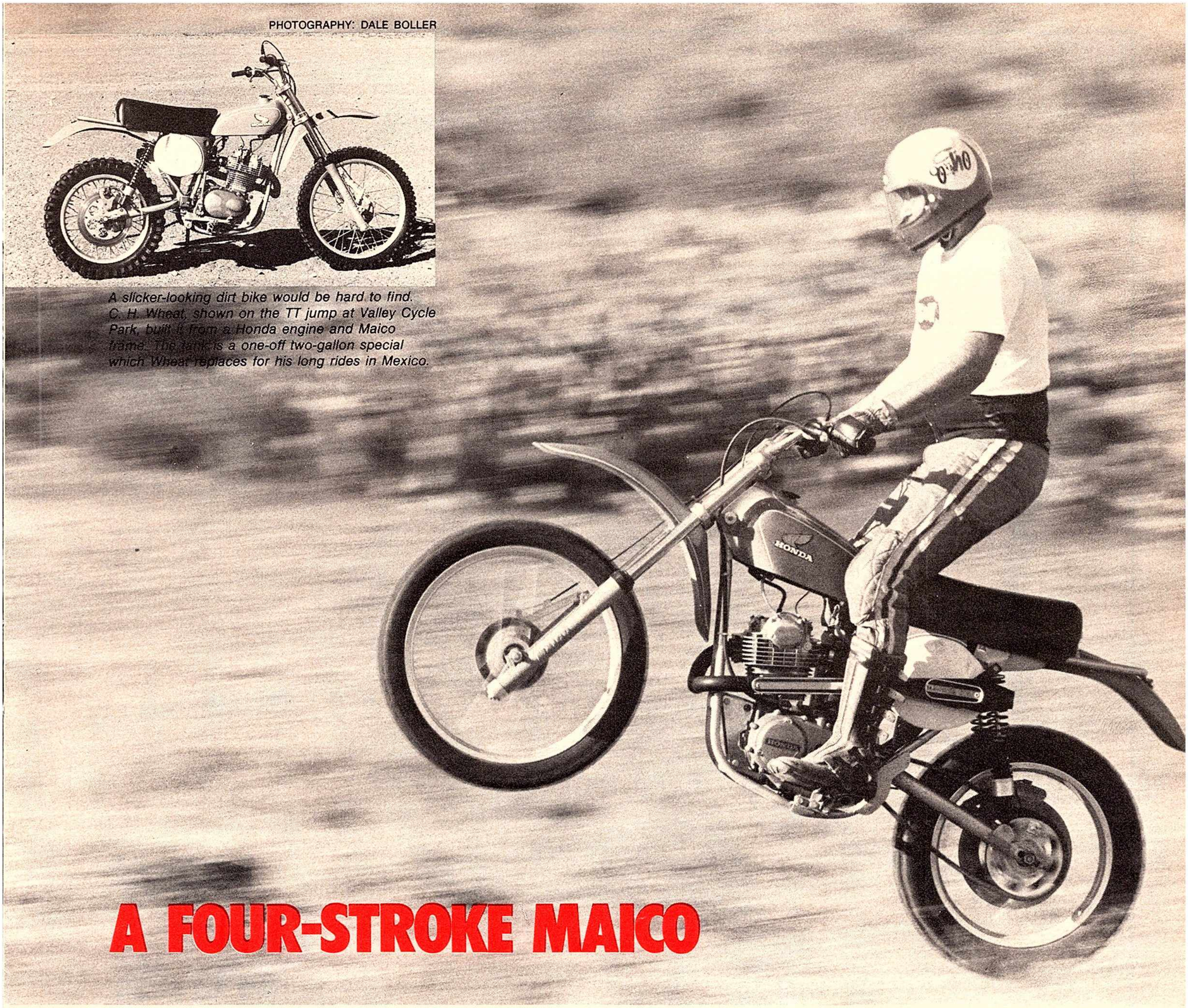
About a year ago John Blum of Honda Racing introduced Bell to Al Baker and Gene Cannady, a forminable pair of off-road riders capable of winning any cross-country race in the world. In their first ride on Bell's Honda the pair teamed to win the Parker 400. They broke a gear in the Mint (an item Bell now replaces with his own design) and won the Open Class in the Baja 500 last year. Baker, 24, has raced everything from desert Triumphs to motocross in 14 years of riding. He presently operates Al Baker R & D in Van Nuys, Calif. Cannady, a 34-year-old undercover police officer, has been known for blistering speed and bad luck since he began racing 6 years ago. In the last year Bell's XL has improved both his speed and his luck.

The bike has a C & J frame, MR tank, Betor fork, S & W gas/oil shocks, Honda wheels and special lighting coils built in Japan that power three enormous Ciebe lights. In Baja's blackness the bike could be seen for 10 miles and heard for three. With the big tank and 30-pound lighting system it weighs 302 pounds wet.

But weight isn't a problem for Bell's 410cc, 38-horsepower engine. Only Mitch Mayes' Husky was faster, and nothing had the Honda's drive out of a fast turn. Bell says all the power is in the head. Jerry Branch flowed this one, and Bell fitted needle bearings on a Long Beach Honda grind cam. A Lockhart oil cooler adds oil capacity and "saves the motor at wide open-speeds," according to Al Baker, who said he could remove the oil dipstick with his fingers instead of the pliers necessary without an oil cooler.

Reliability and speed win Baja. This bike ran 800 banzai miles in 18 hours 22 minutes without a speck of trouble or power-fade. It hadn't been touched except for cleaning when we rode it a week after the race, yet the engine was still crisp and the suspension supple. The weight of the lights definitely gives the front end a bulky feel—but you won't need them on your bike anyway.

PHOTOGRAPHY: DALE BOLLER



*A slicker-looking dirt bike would be hard to find. C. H. Wheat, shown on the TT jump at Valley Cycle Park, built it from a Honda engine and Maico frame. The tank is a one-off two-gallon special which Wheat replaces for his long rides in Mexico.*

# A FOUR-STROKE MAICO

● Of all the special Hondas presented here, this one is the most personal. C.H. Wheat of Sunnymead, Calif. has had a love affair with Maico handling for years and four-stroke singles even longer than that. The inevitable marriage resulted in one of the best-executed and best-looking custom dirt bikes ever built. In person the Maida (or is it a Hondico?) sparkles in a rich red/orange paint accented by pinstriping and polished metal. One would hardly expect Wheat to jeopardize its mantlepiece finish by actual use, but he built it to race TTs, scorch fire roads and play in Baja. He pursues all of these endeavors with a smooth, fast riding style that belies his 46 years.

Snuggling the Honda engine in a Maico frame required new motor-mount plates and careful alignment in a frame jig. Wheat couldn't use a Maico rear wheel because he needed fewer than the 46 teeth on Maico's smallest rear wheel sprocket to get the proper final drive ratio. So he took a Barnes spool hub and simply fitted a disc.

The entire front end is Maico except for a D.I.D. alloy rim. With the latest Maico fork (delivering 1.4 inches more travel) and S&W gas/oil shocks moved forward, Wheat's playbike has incredibly effective suspension. By choice he has located the pegs low and rather far forward, so once perched on the tall Maico seat, the most comfortable riding style is sit-down. The suspension allows an almost constant sit-down position without being cushy or insulating the feel of the ground's texture. Steering is typically Maico—a bit slow but sharpshooter accurate. Wheat is particularly qualified to perfect his bike's handling because he works at S&W Engineered Products doing suspension research with Tim Witham.

Like the other two custom XLs, this one has a 402cc Bill Bell engine. The usual Bell modifications have been made to a new center-port head which Wheat has fitted with a Lectron carburetor. The bike feels more powerful than the other two XLs primarily because of its incredibly low wet weight of 228 pounds. Based on an estimated 34 hp, its power-to-weight ratio is 6.7 lbs./hp, which is equal to the lightest and most powerful motocrossers produced today. Not bad for a private effort.

Riding the Wheat special is similar to riding the other custom XLs. Noise dominates the experience, followed closely by constant reminders of the engine's power: breathtaking speed arrives with a lot more revs left to go; the Honda can dig out of tractionless sand and skim across the top in a straight line; more throttle is usually equivalent to downshifting; unconquered hills become scarred with one lone tire track; in mud just sit on the seat and let the engine lug. It was because of this motor and its characteristics that all the custom frames and chassis were conceived, so it isn't surprising that engine performance is the most impressive feature of a custom XL. But it takes the engine and chassis expertise of the Bells, Wheats, Coles, Jentges to bring it out. ◉

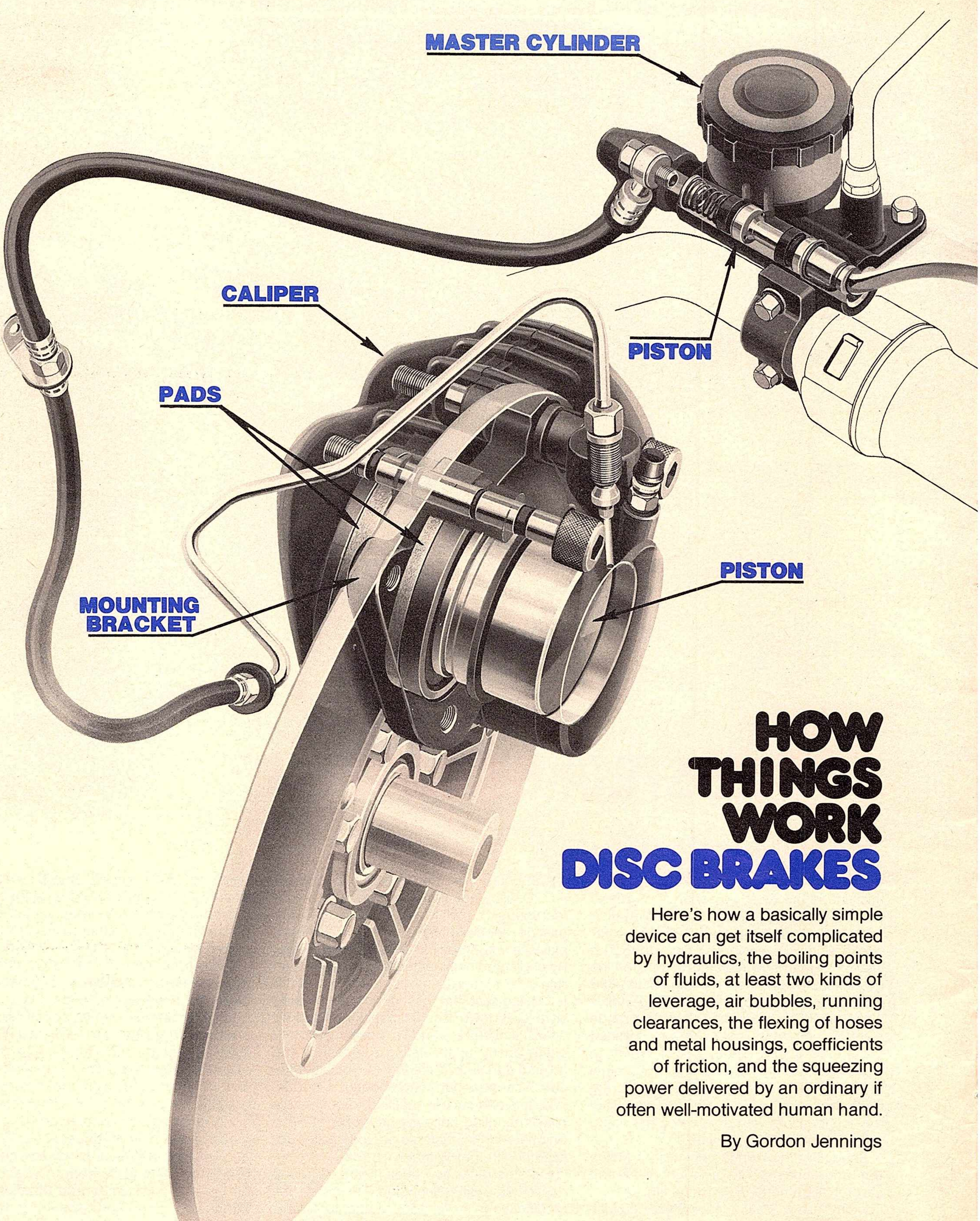
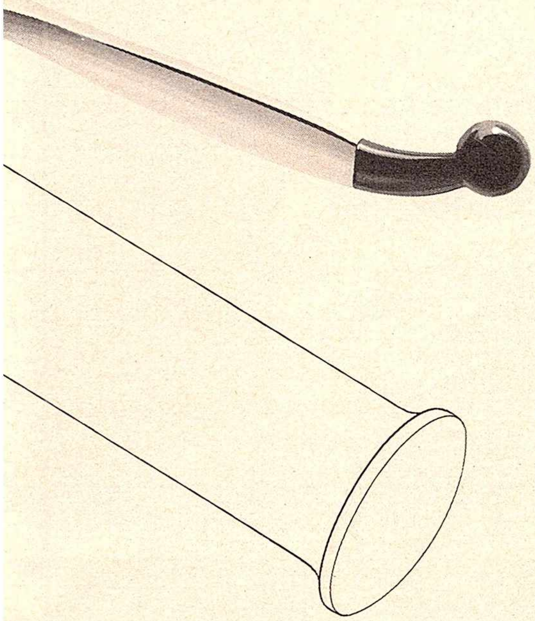


ILLUSTRATION: SHUSEI NAGAOKA

# HOW THINGS WORK DISC BRAKES

Here's how a basically simple device can get itself complicated by hydraulics, the boiling points of fluids, at least two kinds of leverage, air bubbles, running clearances, the flexing of hoses and metal housings, coefficients of friction, and the squeezing power delivered by an ordinary if often well-motivated human hand.

By Gordon Jennings



● Brakes, whether drum or disc, have a single thing in common: they slow your motorcycle by using friction to convert its momentum into heat. You invest the heat yielded by burning gasoline in the work of getting the bike moving; a lot of that heat reappears in its brakes when you pull to a stop. It's a neatly balanced bit of physics, this heat-momentum-heat conversion, and it says some of the gas you buy ultimately goes toward setting your brakes on fire.

Heat does terrible things to a drum brake, as thermal expansion distorts the drum and the brake shoes lose full contact with its inner surface. That can't happen to a disc brake, because the disc retains its shape at any but the most extreme temperatures—and even a warped disc is still captured between the flanking friction pads in the brake caliper. The disc brake can have problems; fade doesn't usually happen to be one of them.

One glance at a disc brake should be sufficient to give you the basics of how it works. There's that disc, which turns with the wheel, and it is captured in a glorified C-clamp: the caliper. Most of the discs you'll see are a ring of stainless steel riveted to a light aluminum center. Stainless steel is slippery and scores easily, but it doesn't rust. Cast iron is a better disc material in many ways; it also grows rust spots and can't be trusted not to break unless it's fairly thick—and heavy. Hard-surfaced aluminum discs are very light and can provide powerful action, but cost the earth—and their plasma-applied coating is somewhat abrasive to the pads.

Purely mechanical actuation is fine for drum brakes, as they have a large area of soft, high-friction shoe facing to drag against the rubbed surface. But the disc brake's small pads have to be very hard for wear resistance, which means they must be clamped against the disc with terrific pressure before they'll develop enough friction to stop your bike. Honda gets good results from cable actuation on the lightly-loaded CB125S disc brake; hydraulics provide the mechanical advantage needed on larger bikes.

Leverage obtained with hydraulics is much like that from a chain and sprockets, except that it involves fluid and pistons. Brake fluid transmits pressure from the small master cylinder piston to a bigger piston (or pistons) in the caliper, and the difference in piston areas—usually about 7.5:1—trades movement at the small piston for greater force at the larger. This exchange begins at the lever itself, with a 4:1 mechanical advantage. Your hand's 50-lb, 40mm squeeze becomes a 200-lb, 10mm activity at the master cylinder piston, and only 1.3mm of movement but 1500 pounds of clamping force down at the brake caliper.

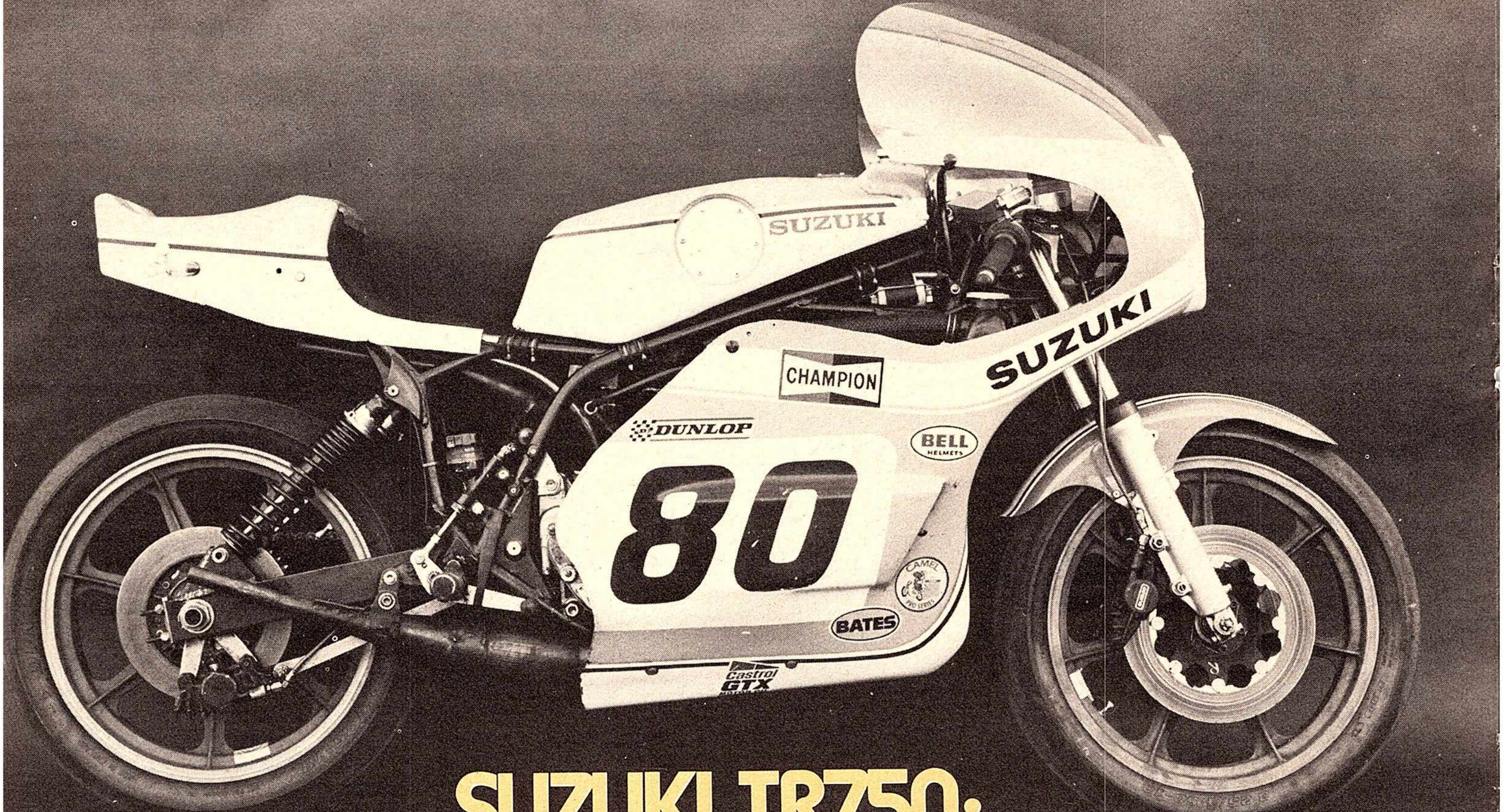
Ideally, you would have all the above pressure increases without any movement; you certainly wouldn't want the lever coming back against the grip. Pad wear introduces a potentially huge departure from this ideal, as it can amount to 10 times the pad/disc clearance that may be taken up with a single squeeze of the lever. To avoid that problem the pads must be held very close to the disc, and this chore is handled automatically with a thick, square-section sealing ring in a groove cut in the caliper's cylinder bore. The sealing ring holds the caliper piston fairly tightly, but hydraulic pressure overrides its friction, pushing piston and pad toward the disc until all clearance is gone. The sealing ring is slightly distorted by this movement, and when the pressure is removed the ring relaxes and in so doing retracts the piston a minute distance to restore pad/disc running clearance. The ring also prevents vibration and jolting from moving the piston.

A disc brake's pad/disc retracted clearance must be held at a minimum to avoid an inconveniently large take-up movement at the lever. That minimum depends on the run-out, or wobble, in the disc—and on the design of the caliper itself. Single-piston calipers have one pad pushed by a piston; the opposite pad is fixed and moves into contact with the disc only because the whole caliper is free to move sideways. The lateral movement can be provided by mounting the caliper on a hinged strut (like the Honda CB750) or by hanging it, in a slide-fit, on a pair of large-diameter pins (the arrangement illustrated here). In either case hydraulic pressure drives the piston one way and hauls the whole caliper across in the opposite direction. This "floating caliper" layout is widely used and has the virtues of lightness and simplicity, but the necessarily loose mounting requires (or will produce) comparatively wide disc/pad clearances and a lot of take-up in the brake lever.

A better layout, from the standpoint of minimal take-up, is the one employed by Yamaha: the fixed, dual-piston caliper. In this you have a solidly-mounted caliper, with two pistons driving in from the sides to clamp the brake pads against the disc. If the disc runs true, there needs be only a fraction of a millimeter between each pad and the disc's sides.

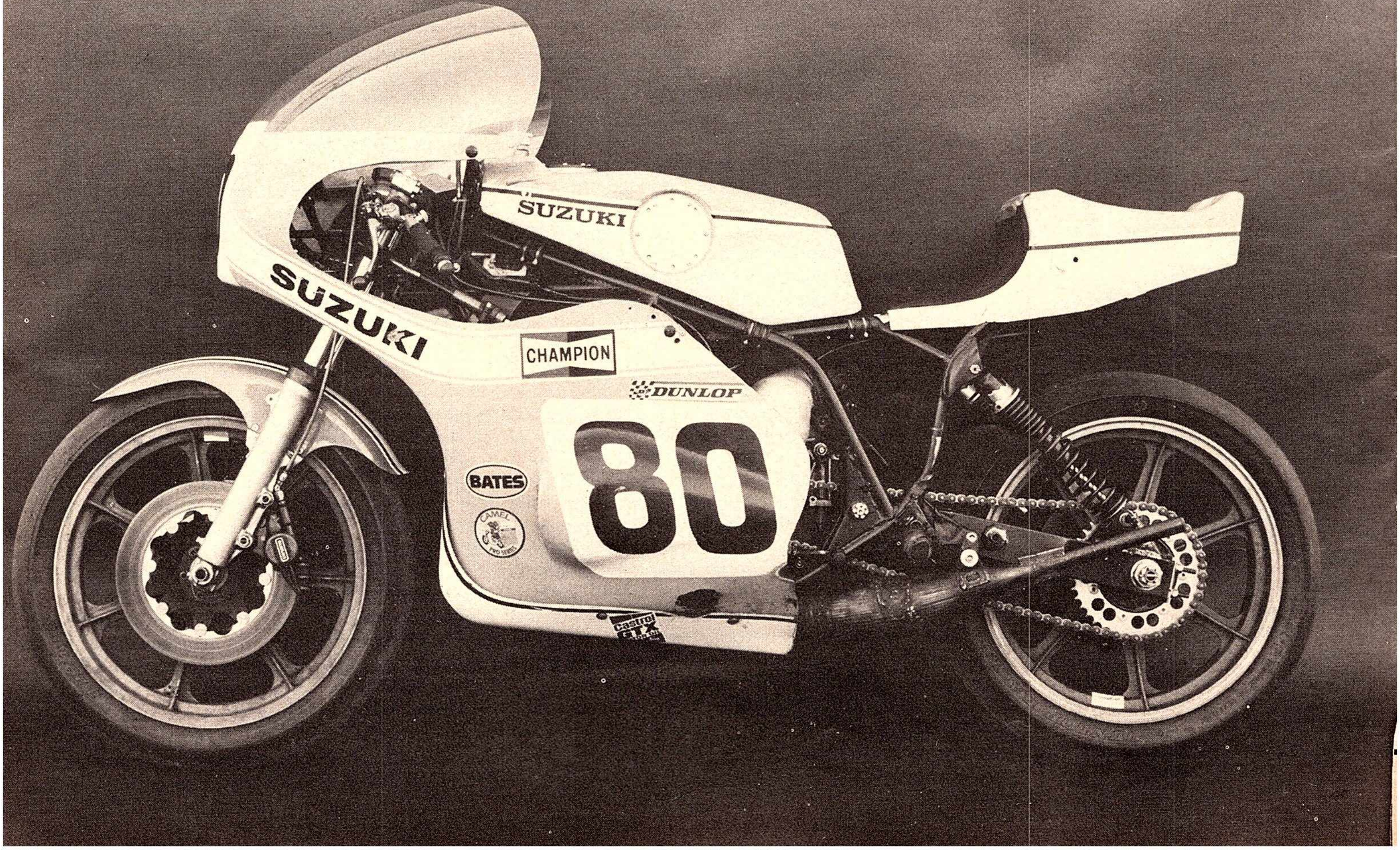
Rigidity is extremely important in a disc brake caliper. It should be obvious that if there is a 1500-lb force pressing the pads in against the disc, then there will be an equal force tending to pry the caliper open like an oyster, and flexing there will translate into a spongy feel at the lever.

Sponginess can also be caused by bulging brake hoses, but the worst kind of rubbery brake feel comes with bubbles in the fluid. Gases, unlike fluids, compress under pressure, and even a small air bubble will make a brake feel springy. Even if there's no air in the system you'll get bubbles when the caliper gets hot enough to boil the fluid, as sometimes happens. Fluid for disc brakes has, by DOT regulation, a boiling point above 400°F. But it will absorb water from the air if given a chance, and that can drop the boiling point below 300°F. The mere fact that the standard for boiling-point is so high should tell you what a disc brake is expected to survive; that they work so well is a credit to the industry—and a blessing for all us riders. ◉



# SUZUKI TR750:

## AN INSIDE LOOK AT A 115-BHP, 180 MPH HOT ROD MOTORCYCLE



Suzuki's GT750-based road racing bike spotted its major competitor a cylinder, two thousand revs and a dozen transfer ports—and then matched the best for sheer speed.

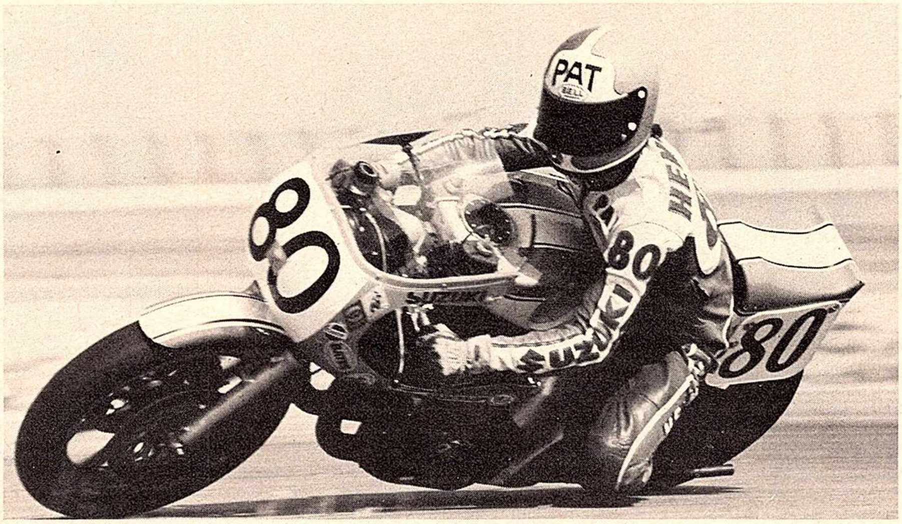
By Gordon Jennings

● If there is any surprising aspect to the past couple of road racing seasons it is not that the awesome Yamaha TZ750 won so much, but that Suzuki's far less ambitious TR750 remained in such close contention. Yamaha's Four, after all, is the fastest and one of the most intricately-contrived racing motorcycles in history. A relaxation of the AMA's rules virtually invited manufacturers to field 750cc, full-house Grand Prix machines, and Yamaha responded to that opportunity in a manner verging on overkill. Though Yamaha did not initially go right to the displacement limit (the TZ750A's total cylinder volume was 694cc) the overall design followed state-of-the-art parameters. Experience with the touring-model-based TZ350 was reflected in the TZ750, but the latter came into the world a pure racing machine; its highway-cruising counterpart never came to market.

Suzuki must have felt badly caught short when the Yamaha TZ750 appeared on the scene in 1974, and there must have been some closed-door discussions about withdrawing from AMA competition rather than soldier on under a fundamental handicap, which was an accurate assessment of their situation. Displacement limits may encourage performance parity; they do not guarantee it. Not only had Suzuki been placed in an inferior position as regards numbers of cylinders, total port areas, maximum crank speeds and the like, they also faced the unhappy prospect of confronting Yamaha's quintessential racing machine with what may best be described as a hot rod. Behind all the flash and fiberglass Suzuki's TR750 was, and remained, nothing much more than a hyperthyroid version of the GT750 tourer, a solid but unpretentious two-stroke triple available to anybody with a few dollars and solid credit.

In the end a brave optimism prevailed, and Team Suzuki—resplendent in blue and white—did appear to contest the 1974 Daytona 200. And they very nearly upset Yamaha's lavishly-financed apple cart. By way of bracing itself for the Yamaha onslaught Suzuki had come up with new frames to cure the handling problems that had earned the earlier TR750 the nickname "Flexi-Flier," and fitted six-speed transmissions to make the most of the rather improbable horsepower they were wringing from their leaned-on touring engines. They also had the gritty, talented, Daytona-wise Gary Nixon going for them, and hoped they could count on teething problems slowing the all-new Yamahas. Totalled, every plus and minus taken into account, it seemed as though what they had might well be enough. But that kind of bookkeeping can be unbalanced by racing luck, which for Suzuki always has been wretched or worse. At Daytona, in '74, it was incredibly bad: Nixon literally had victory in hand when, in an uncharacteristic lapse of judgement, he decided to zap Agostini before Ago could make the final fuel stop that he, Gary, had already completed. Trying hard for the definitive drive out onto the oval Nixon threw his bike down the road, and Suzuki's win went with it.

That Daytona surely was an agonizing disappointment for Suzuki. Still, it demonstrated that their hot rod definitely was fast enough to run with the *pur sang* Yamaha TZ750, which was enough to keep them trying even though their luck went from bad to catastrophic. However rapid a team's motorcycles may be, wins are going to be very elusive unless it has the services of one or two absolutely first-order riders—of whom there are never more than perhaps a half-dozen in the entire world. Teams may be rounded out with second-magnitude Stars, usually young talents acquiring final polish, but fortune favors those who come to the contest with a couple of genuine Super Stars in good working order. Suzuki has had its share of stellar riders under contract, but all too frequently has not had them available when it counted.



The team might have had Jody Nicholas on the line these past two seasons; he was injured into retirement. Suzuki signed the incredible Cal Rayborn for '74, but he was killed at an obscene little track in New Zealand before the season began. Barry Sheene is a supremely talented Suzuki Teamster, but he has spent more time in plaster than in his blue and white leathers these last 24 months. And Gary Nixon broke everything but his spirit while test-riding in Japan shortly after the '74 Daytona race and was unable to ride until the final event in 1975.

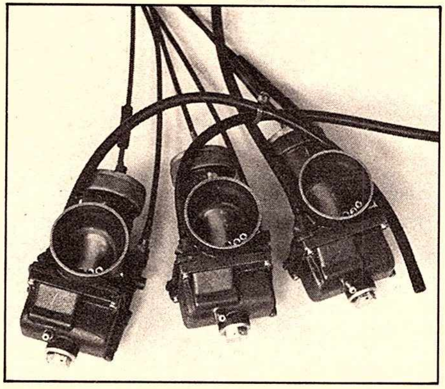
Last year's Ontario was a good one for Gary Nixon, who proved he could come hobbling back full of scar tissue and orthopedist's hardware (which may get rusty before he does) and run like he didn't know anything about pain. But last year's last seems to have been the last straw for Suzuki. Gary could have won Ontario for them had the mechanical demons struck down Kenny Roberts instead of him, only that's not how it was: the demons chose Suzuki again, and it was once too often. Shortly after silence once again settled over Indy-West, word came that Yamaha would not have Suzuki to kick around in 1976. (Kawasaki felt the same way and said the same things—but that's another story.)

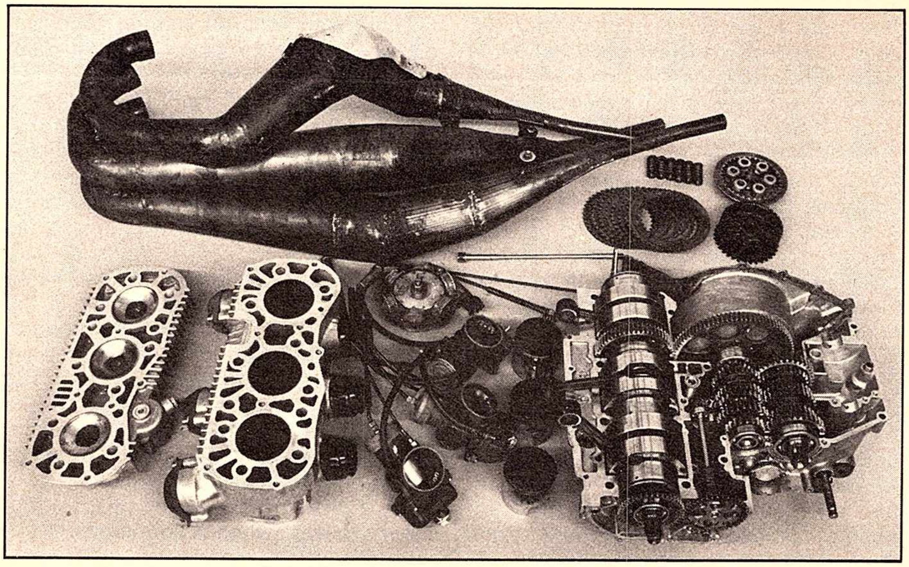
So it was all over but the grumbling. The AMA's records would show that Suzuki entered the TR750 triple in many races, with little consequence to the ultimate outcome. That's a fact. But it also is a fact that the Suzuki hot rod stayed very much in contention, right up to and including the race at Ontario, and that was sufficient reason for us to be very curious about the specifics of how they did it. Suzuki's riders have confirmed the general impression that the TR750 engine is the real chugger, comparatively speaking, that its exhaust note suggests. They tell us the engine pulls hardest at about 8000 rpm and begins to run out of breath well before reaching 9000 rpm. You have to assume it makes very nearly the same horsepower as Yamaha's Four, as the TR750 pushes close to the same amount of air and shows—give or take a click—the same top speeds. The level of performance reached seems natural in the Yamaha, which bests the Suzuki by one cylinder, a couple of thousand revs, and more than a dozen transfer ports; it's astonishing in a tourer-based triple with cylinder scavenging that dates back to Dr. Schneurle's original patents.

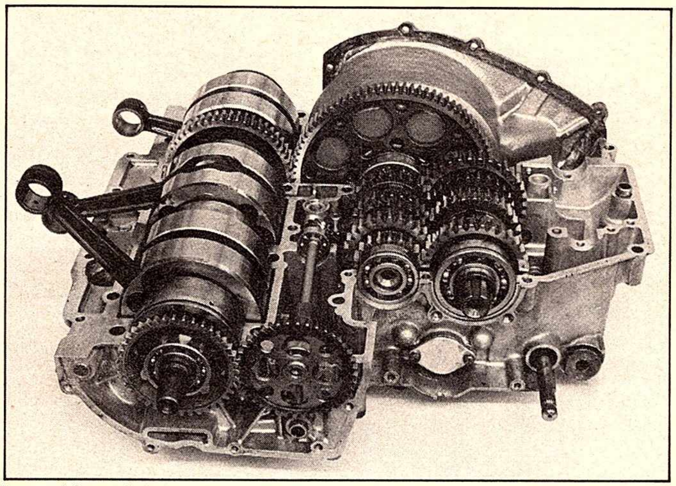
In fairness to Yamaha it must be said that Suzuki's engineers were not laboring against overwhelming odds when they set

*In this collection of hardware mean working gas pressures of about 125 psi are generated, made to rotate shafts and gears, and emerge as a 115-horsepower yank at the TR750's final drive chain.*

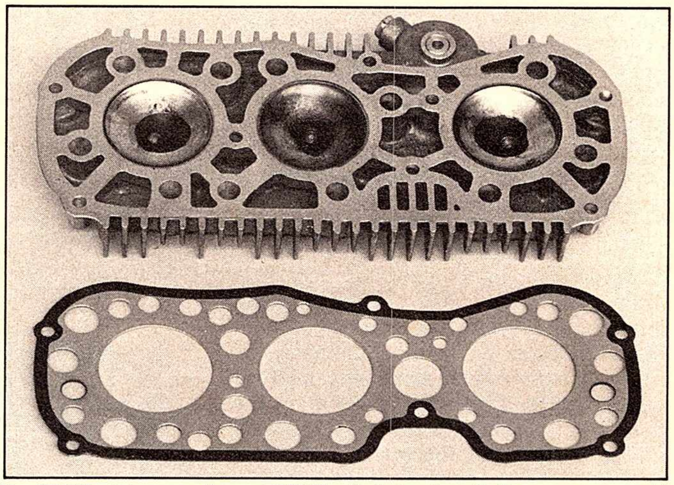
*This trio of special, magnesium-bodied Mikuni carburetors cost U. S. Suzuki a staggering $900.*



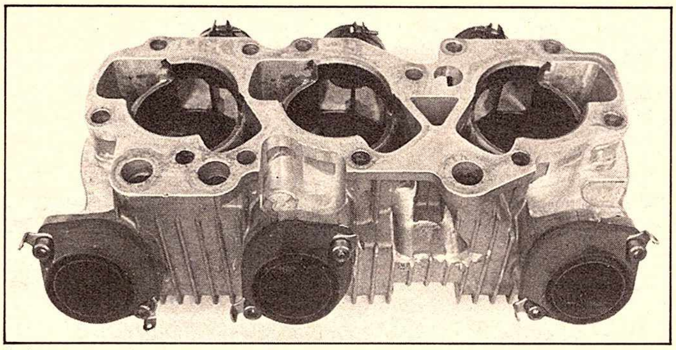




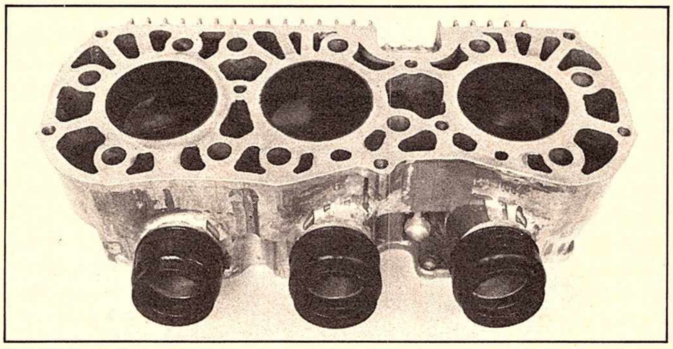
*A special crankshaft, and numerous special gears: all those in the six-speed transmission, the primaries, and two of the four water pump drive gears.*



*The TR750 engine uses thinned GT750 cylinderheads, with the same non-squish combustion chambers, and special head gaskets in varying thicknesses.*



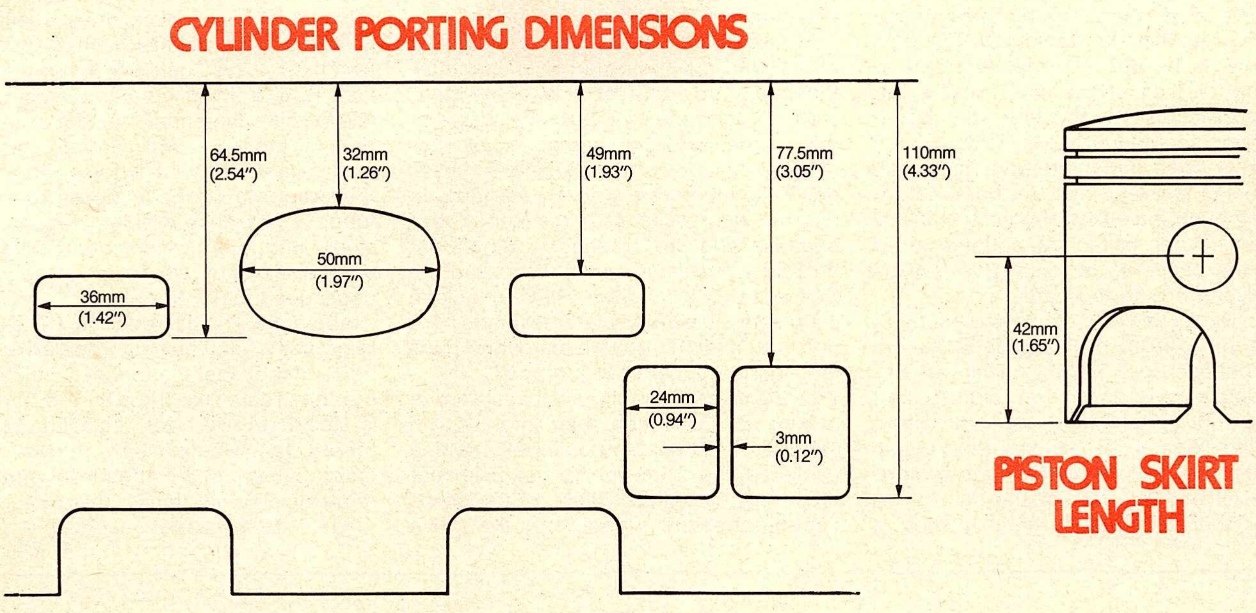
*Only two transfer ports per cylinder, but fed from very large passages made possible by the angular displacement of all the cylinders' ports.*

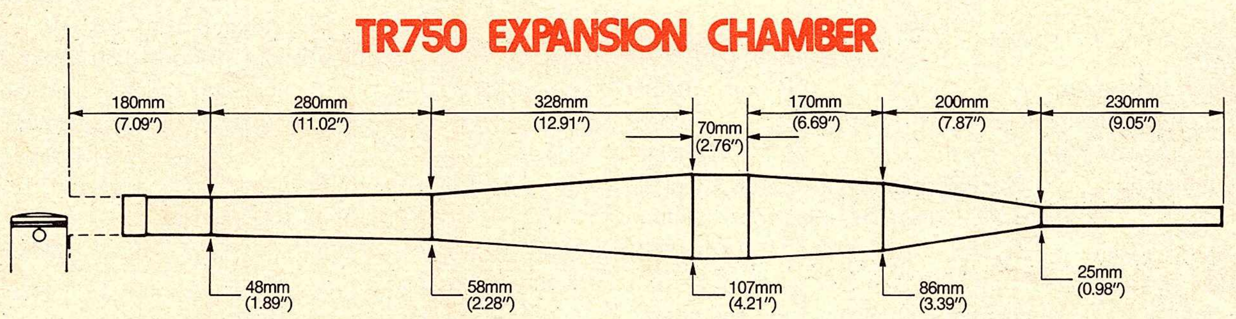


*The TR750 cylinder block has been milled and rotary-filed back, front and sides where the casting is unnecessarily thick to remove mere ounces.*

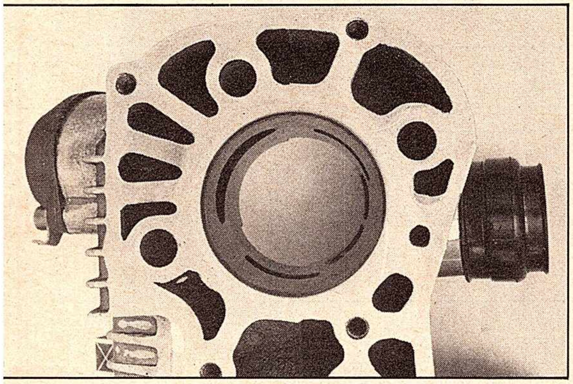
out to make the plain-vanilla GT750 engine into a big-numbers horsepower pump. The triple's crankcases are sturdy, its crank and lower-end bearings generously proportioned, and there's as much water in circulation around its cylinders as anyone could want. And though there are only two transfer ports in each cylinder, the port windows are fed by unusually large, well-shaped transfer passages. Instead of forcing the GT750 engine's transfer passages to bang elbows, as they do in most in-line designs, the block was laid out with the exhaust and transfer porting in cylinders one and two rotated about 35 degrees to the left. Cylinder three stands slightly apart from its fellows, to make room for the mid-crank power takeoff gear, and it is turned to the right. If you're going to make a stocker into a racer, you look for something that delivers pretty good power in standard form, offers the promise of more, and is so strong the average rider couldn't break it with a sledge hammer. Suzuki has precisely those characteristics in the GT750 engine.

Knowing all the above, we were still very curious about specifics—though without much hope of having that curiosity satisfied. Whatever the reasons, good or merely reflex, factory teams do not welcome the inquiring reporter into their garages and Suzuki always has been more secretive than most. They'd rarely let anyone past the door, and even when one gained admittance to the *sanctum sanctorum* questions were likely to be taken as impertinences. However, impertinence is the reporter's stock-in-trade and when word came that Suzuki had retired its AMA road racing effort and the TR750 would run no more, we asked for a last, closeup look. "It's all history," we said, "where's the harm?" To our im-

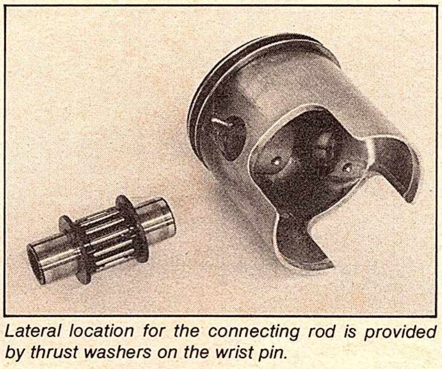




PHOTOGRAPHY: BILL DELANEY, DALE BOLLER



*The exhaust port's chordal width is no less than 71.4-percent of the bore diameter.*



*Lateral location for the connecting rod is provided by thrust washers on the wrist pin.*

mense amazement the Powers That Be at U.S. Suzuki gave the project their blessing. They would bolt Pat Hennen's Ontario bike together, replacing its failed crank, and deliver it to our door. They'd even provide the services of a team mechanic. We couldn't ride or dyno-test the bike—they didn't want to put that much preparation time into a museum-piece—but we were free to fondle and measure and ask questions to our very heart's contentment.

Suzuki sent us the bike, as promised, and team mechanic Ken Bailey, an affable New Zealander who was trained for working on aircraft and got pulled into motorcycle racing by the late Geoff Perry. Bailey professed to know little about the TR750 other than how its parts are supposed to fit together, and that probably is the role his employers envisioned for him. But he impressed us as being the kind of man who puts a lot into his job rather than merely making the appropriate motions, who has experience and has learned from it (by no means the same thing), and who knows enough to be candid in admitting it when he doesn't have the answer to a question. Much of what we learned about the TR750, especially as regards its chassis, was information provided by Ken Bailey.

Our own scales furnished the first bit of interesting intelligence about the Suzuki TR750: its dry weight is 326 pounds—only four pounds more than that of the TZ750A we had for a similar study two years ago. Add oil, water and fuel and you've got a starting-line weight right at 375 pounds. That's very light, considering that a GT750 tourer has a wet weight of 556 pounds—and it starts one looking for a startling 180 pounds worth of difference. It can't all be in the fact that the race version doesn't have lights, battery or horn.

Some of the weight difference is in the TR750's front brake assembly. It has the dual-disc, twin caliper layout of the GT750, but that's where the similarity stops. For one thing, the GT750 uses floating calipers and fixed discs, and that order is reversed on the racing machine. The TR750 calipers are of the dual-piston type, visually similar to the British Lockheed calipers used on some Triumphs. The discs are two-piece affairs, each comprising an eight-point dished hub that appears to have been machined from an aluminum blank, and the disc proper—which is aluminum with a plasma-applied hard coating on its rubbed surfaces. Early versions of this brake had hub and disc solidly together, but it was found that heat-produced distortion made the disc wobble, the wobble would drive the actuating pistons back into the caliper, and the riders would find themselves having to pump away the slack by working the lever before the bike would actually begin to slow at the desired rate. Attempts to prevent disc distortion failed, so they attached the disc to the hub with large-diameter shouldered bolts, which serve as drive dogs engaging with half-circle cutouts in disc and hub. In that manner, even though the disc wobbles, the lateral movement can be accommodated away from the calipers; the disc runs true as it passes through the pads.

Ken Bailey told us, "Racing riders can't get enough front brake as long as the brake doesn't get grabby." This was the reason for using fairly soft, high-friction Mintex pads. Ken said the pads furnished with the original TR750s were extremely durable, but all the riders wanted more powerful braking even at the risk of finishing the pads before they finished a race, as once happened to Cliff Carr at Laguna Seca. But the rear brake is another matter, as Bailey explained:

"I use the harder pads on the rear brake, and cut them narrower, because they're too powerful for most of the guys. David Aldana doesn't care—he wants to lock up the rear wheel and go in sideways anyway—but riders who use more finesse don't like much rear brake. I started cutting the rear brake pads for Geoff Perry because after he crashed in Singapore he had a steel pin in his foot, and his foot was very insensitive. He kept locking it up and going all over the place. For him I cut until there were almost no pads left—just a couple of thin strips."

Oddly, the TR750 did not have an aluminum rear disc; the rear rotor was in cast iron, with cast-in cooling/lightening vents leading from hub to rim. The rear brake disc is bolted solidly to the Morris cast-magnesium wheel, but the drive sprocket on the opposite side of the wheel transfers power *via* a rubber-bushed cushion-type hub. The drive cushion is provided to protect the chain (Denselube, which Ken says "gets dry and rattles, but lasts"), and the bikes came from Japan with a roller-type chain tensioner pivoted from the left swing arm member. The bikes also came with wire wheels, and when the switch was made to Morris mags they found a clearance problem between tensioner and rim. The tensioners ultimately were discarded, without any unpleasant consequences to the chain.

About the wheels Ken says, "The riders really like them. The cast wheels are more rigid, so they feel the bumps a little more, but they really like the way the handling is steadied." He adds that although the TR750 has wide rims by present standards (2.5 and 3.5 inches front and rear, respectively) he thinks the motorcycle

*(Continued on page 90)*

## SUZUKI TR750

### ENGINE

| | |
|---|---|
| Type | Two-stroke, piston-port, triple |
| Bore and stroke | 70mm x 64mm |
| Piston displacement | 738cc |
| Compression ratio | 6.76:1 (variable) |
| Lubrication | Fuel/oil premix, 20:1 (Shell Super M) |
| Ignition | Suzuki P.E.I. (Pointless Electronic Ignition) |
| Spark Plugs | Champion N57G or N82G |
| Port Timings: | |
| Intake | opens/closes 90° below top dead center, 180° duration |
| Transfers | open/close 112° below top dead center, 136° duration |
| Exhaust | opens/closes 80° below top dead center, 200° duration |
| Carburetion | 3; Mikuni VM38SC |
| Jetting: | |
| Main jet | 280 to 330 |
| Needle jet | R-2 |
| Jet needle | 6DP5-2 |
| Pilot jet | 45 |
| Air jet | none |
| Slide cutaway | 2.0 |
| Idle air screw | 1½ turns out |
| Bhp @ rpm | 112–115 @ 8200 (estimated) |

### DRIVE TRAIN

| | |
|---|---|
| Primary | Straight-cut spur gears |
| Clutch | Multi-plate, dry |
| Transmission | Six-speed, constant-mesh |

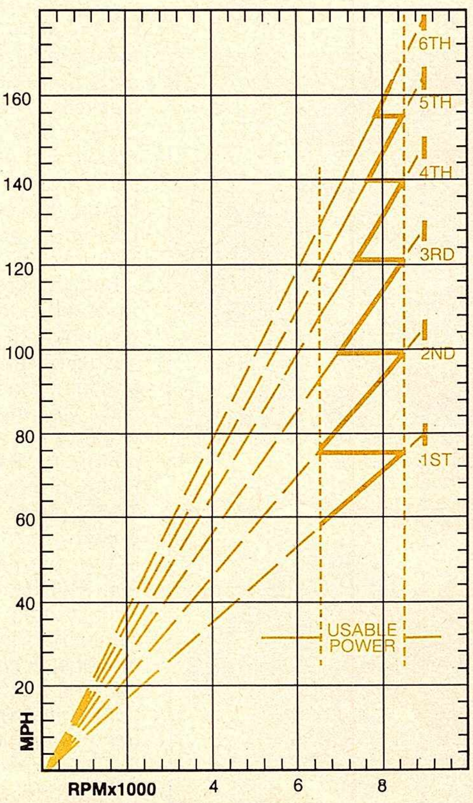
Internal ratios (overall, with 17/41 Ontario sprockets)
(1) 2.19:1 (8.30:1) (2) 1.63:1 (6.19:1) (3) 1.33:1 (5.06:1)
(4) 1.15:1 (4.38:1) (5) 1.04:1 (3.94:1) (6) 0.96:1 (3.65:1)

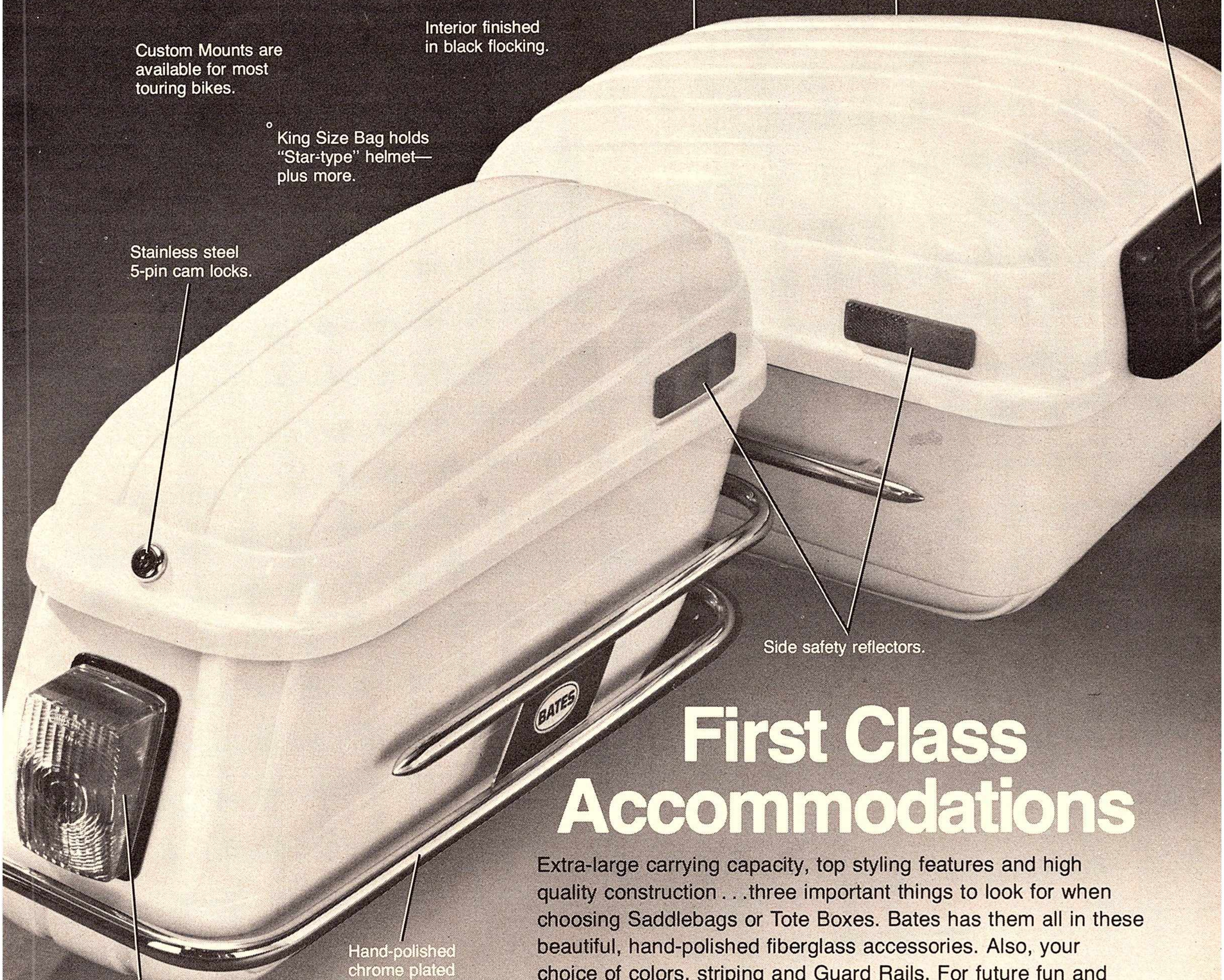
### CHASSIS

| | |
|---|---|
| Wheelbase | 57 in. |
| Rake/Trail | 29°/4.17 in. |
| Frame | Cradle-type, in chromium-molybdenum steel tubing |
| Wheels | Morris cast-magnesium, 2.5 x 18 front; 3.5 x 18 rear |
| Tires | Dunlop 3.25 x 18 front; 3.50 x 18 rear |
| Suspension | Fork and shocks by Kayaba (per Suzuki specifications) |
| Brakes | Dual-piston calipers, twin-disc front; single-disc rear |

### WEIGHTS & CAPACITIES

| | |
|---|---|
| Weight, dry | 326 lbs. |
| Oil capacity (trans.) | 2.7 qt. |





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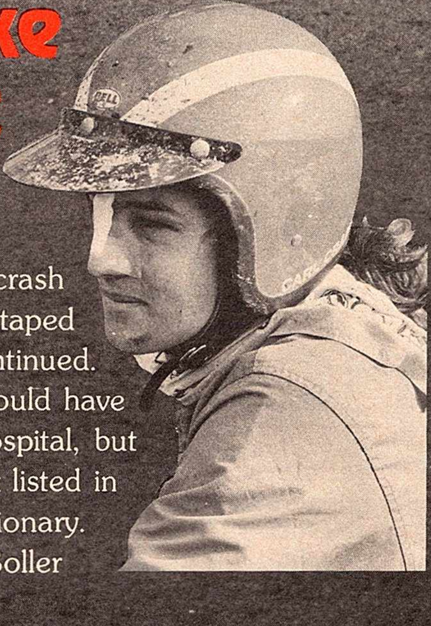
# Carl Cranke Talks About The ISDT



After a terrific crash on Day Two, Carl taped his face and continued. Most people would have checked into a hospital, but the word *quit* isn't listed in the Six Day dictionary.

By Dale Boller

● As expected, America did not win the ISDT. Unexpectedly, Czechoslovakia did not win the ISDT either. For the first time in five years the militaristic Czech teams toppled as the wasp-like 100, 125 and 175 West German Zundapps darted over the Isle of Man with drill-team precision. America finished fourth.

For most people, the results say as much about the ISDT as three thousand words discussing bonus points, course marks, special tests and other seldom-understood subtleties of the event. So instead of the traditional "race report" (who-passed-who on what lap), with long asides to explain scoring, *Cycle* decided to get Carl Cranke's impressions of the Trial. You won't learn every detail about the Six Day but you will meet one of its fiercest competitors and read some amusing tales about the ISDT and the IHDT (International Half Day Trials), which are the wheelie-filled trail rides Carl takes near his home in Placerville, Calif.

Cranke won his fourth straight Gold Medal this year at the Isle of Man, where he rode as a U.S. Trophy Team member. Ten days later he won the 125 class in the Baja 1000. His home is located one hour east of Sacramento in the heart of California's Gold Rush country. Carl's old wooden house has all the

necessities—a motorcycle shop downstairs; a lot of rough-cut wood paneling upstairs; a fireplace surrounded by inviting deerskin rugs; good music on the quad (Dylan, Seals & Crofts); perfect eggs for breakfast; friends dropping by; not too much hassle from the telephone; and two double-trick 350-class ISDT Pentons in the garage. One is last year's Isle of Man Gold Medal winner; the other won a Gold Medal in Italy in 1974.

Cranke's job is at the Sacramento warehouse of Hi Point, which is the parts and accessory division of Penton Imports. Most of the U.S. Trophy Team, which rides Pentons, is somehow employed by Penton, either at the R & D Department in Lorain, Ohio, or by Hi Point. Cranke does specialized service work, pushes parts, develops accessories and is Penton's liaison to the West Coast moto-mags.

I had dealt with Carl professionally—securing test bikes, technical information, etc., but talking and riding with him for two days was a personal treat. He was born with three talents that help make him America's most versatile off-road star: (1) a natural aptitude for riding backed by balance, coordination, quick reactions, sharp eyesight; (2) natural physical stamina—he doesn't have to do a lot of running or push-ups to stay in shape; and (3) natural mechanical aptitude ("I never had any money, so anything I ever wanted I had to make"). Carl can look at a mechanical object and usually see how it can be improved. When he unthreads a nut from a bolt the washer doesn't fall on the floor and roll behind a bench; it drops in his hand. By his own admission he is very lucky, but he gives his luck a lot of help. For instance, he has learned to use everything in a shop, from end-mills to welders. He's studied books on two-stroke engines and metal fatigue. He wasn't born with what he knows. And he doesn't go as fast as he does with natural talent alone. Carl works hard at his riding and just as hard at keeping his head in tune. His whole year revolves around the Six Day Trial and Penton motorcycles. He has won motocross races, enduros, desert races, TTs, flat tracks, Baja and Grands Prix. He has tuned for Brad Lackey and himself, yet his main goal is still "improvement."

On the day I arrived with my tape recorder, his Isle of Man Penton also arrived—a collection of battered parts in a cardboard shipping box. We were going to replace the fork tubes, which had been bent at the Six Days, and go riding the next day.

### 1975 Isle of Man ISDT

| | Trophy | |
|---|---|---|
| West Germany | Zundapp | 282.5 |
| Italy | KTM | 2040.0 |
| Czechoslovakia | Jawa | 2836.2 |
| Holland | Monark | 11681.8 |
| Poland | Jawa | 52632.1 |
| U.S.A. | Penton | 93493.7 |
| Austria | KTM | 126629.3 |
| Canada | Jawa | 127847.7 |
| Sweden | KTM | 138814.8 |
| England | Jawa | 140322.4 |
| France | KTM | 227854.5 |
| | Vase | |
| Italy | SWM | 951.4 |
| West Germany | Mai/Hercules | 2073.7 |
| Holland | KTM | 8800.6 |
| U.S.A. | Ossa | 53333.5 |
| England | Jawa | 82992.5 |
| Czechoslovakia | Jawa | 90376.8 |
| Sweden | KTM/Oss/Hus | 99208.0 |
| Ireland | Bultaco | 99475.0 |
| France | Ossa | 99966.1 |
| Belgium | KTM | 102232.0 |
| East Germany | MZ/Simpson | 105169.5 |
| Spain | Bultaco | 109881.2 |
| Canada | Can-Am/Hercules | 258022.4 |

City streets and the wrong side of the road played a huge role in the Isle of Man Trial. Part of the famous TT course was used for a dangerous road-race special test which No.250 Carl Cranke is leading. Zdenek Cespiva is No.279.

*J. Wolfgruber on a 100cc Zundapp was on the West German team which won the Trial.*

Cycle: I thought the ISDT destroyed motorcycles. Are you sure this thing will make it tomorrow?

Cranke: It ought to start right up. It's only six days old.

Cycle: Didn't it seize during the road-race special-test on the last day? The papers said you were clocked at 102 mph and were dicing with Cespiva for the lead when it seized.

Cranke: There was a lot of publicity on that road race. Sections of it were part of the TT course. They call it the Parkfield circuit. It's only about 3½ to 4 miles long—right through the city streets—and they race cars on it.

Cycle: That's where you clocked 102?

Cranke: Yeah. What we did was go past the grandstands on the straight about 7 or 8 tenths of a mile and then made some turns into a series of esses, which are tighter than they look on the map. Then an uphill turns and intersects a street with another sharp turn and all this is in the middle of Douglas, in the middle of town on pavement with knobby tires. We had to do three laps and they started each class in a gang.

Cycle: Did you get a front row start?

Cranke: Yep. My bike had power on the Jawas and I led till the middle of the last lap. It seized starting into a corner and I had to slide past the turn with the clutch in and the brake on. In front of me was a big mountain of dirt and I was still going pretty fast, but I popped the clutch and it bump started so I just powered over the dirt and did a big jump back onto the course.

Cycle: People who didn't know the engine seized thought you did the jump on purpose.

Cranke: No way. I lost two positions—two Czech guys passed me—and I only had a few corners left to get them back so I went nuts. The engine was pinging and I went crazy at Governor's Bridge to pass the first one and then I could see Cespiva on the straightaway ahead of me. That's when I went 102. I was gaining ground so I didn't even put the choke on when it started pinging. I almost passed him at the finish line by half-a-foot just as it locked up absolutely solid.

Cycle: The crowd must have loved that finish.

Cranke: Not as much as me.

Cycle: So you think it's going to be OK to ride tomorrow?

Cranke: Oh yeah. After it cooled I bounced on it and it started again. I rode it back to camp and it started after I washed it too.

Cycle: Why do you suppose it seized after six

days of running fine?

Cranke: Because it just got run too hard. The jetting wasn't set for that and I didn't use the choke enough.

Cycle: Pavement special tests have been criticized in the past for being unsafe—especially with knobbies. Do you think it was dangerous?

Cranke: Oh yes. It is extremely dangerous. It's crazy. I was scared to death. I watched the 250s go by and it blew me away. I was just scared to death.

Cycle: Did your tires slip at all?

Cranke: Oh yeah. Bad, too. I don't mean just a little slip. There were some corners like the Governor's corner where you drag the footpeg sometimes. It's just like riding on a ½ mile dirt track. You come into the corners with the power on and put it sideways. I'd just touch the brake and cross it up, like on dirt.

Cycle: Was anyone else doing that?

Cranke: I don't know. They were in back of me. Jackie (Penton) told me that the rear tire would slip but not to worry about it; just let it slip. After a couple of corners I saw what he meant. When you leaned over at 85–90 mph while it was pulling in sixth gear any little corner or an ess would make the tire go.

Cycle: Your front wheel held?

Cranke: The front wheel would stick because you would lay down on it. It would drift just like you were on ice.

Cycle: Did you practice any of this fast stuff on the pavement sections during the regular part of the Trial?

Cranke: No. I rode the road real conservative. I'm scared of highways.

Cycle: Do you ride a street bike at all?

Cranke: No. I don't even have a license to ride a street bike.

Cycle: At the end of your road race, a group of Czechs were overheard calling you "Crazy Krongkay."

Cranke: Well, I can't pronounce Zdenek Cespiva, either, but he sure is fast.

The first mechanical chore I saw Carl do showed a shocking directness. His friend Gary, whom everyone calls "Honda," and I were struggling to remove the bent Ceriani fork tubes from their taper fit in the triple crown of Carl's Isle of Man bike. We were pulling, twisting and tapping with a mallet when Carl stepped over and asked what was wrong.

"It's stuck," said Honda.

"Sometimes they get that way," said Carl,

*(Continued on page 95)*

PHOTOGRAPHY: SUSIE MANN, HENRY BOLTON, LINDA DOLL

*The Ossa-mounted U.S. Vase Team makes final adjustments in a makeshift pit area.*

# Carl Cranke Talks About The ISDT

# THE RICKMAN HYPHENATES

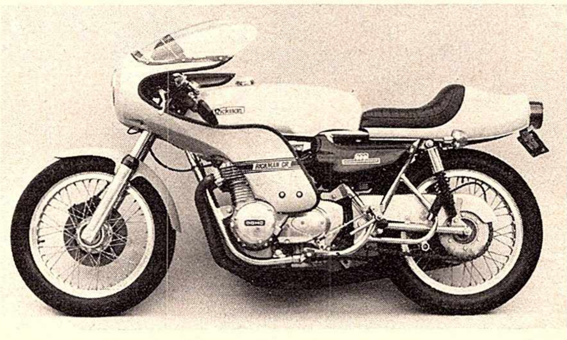
● Motorcycling has its legends, and the Rickman Brothers belong in the official storybook of the sport. But no long recitation of their projects, past and glorified, will be made here. Suffice it to say that the Brothers Rickman have been framemakers *par excellence* to the sport, and their efforts in the past decade have been wide-ranging: scrambles, motocross, road racing, enduro and roadster frames. Readers genuinely interested in the greening of Don and Derek Rickman should consult almost any previous roadtest of Rickman products, wherein the usual litany will have been chanted.

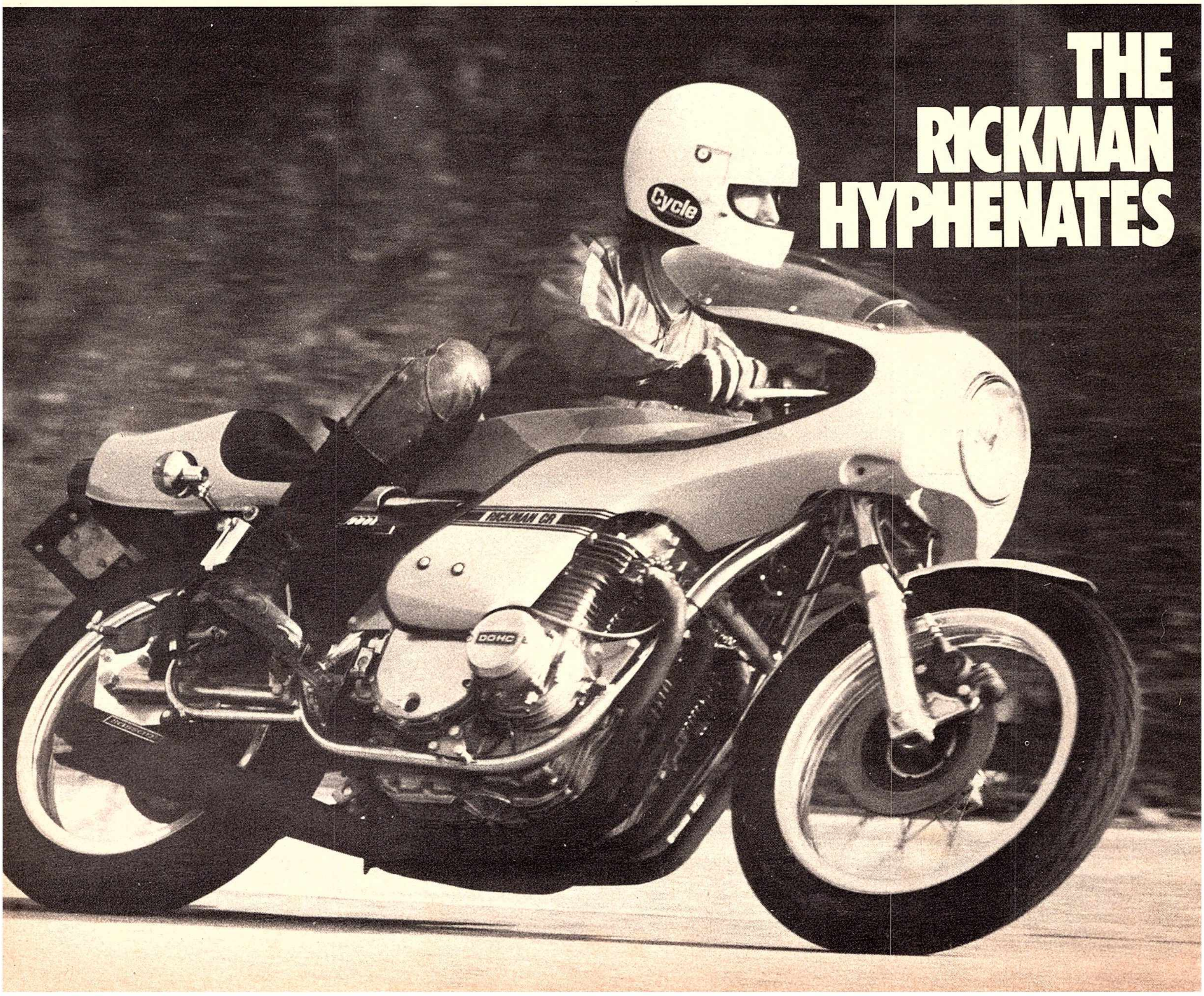
Today the Rickman Brothers are significant because they are survivors in the debacle generally known as the British motorcycle industry. The Rickman operation may well define the future shape of the British two-wheeled industry: small manufacturers of special rolling chassis for Japanese engines. Many students and observers of the British scene now believe it's no longer possible to mass-produce a modern motorcycle engine in England, so British builders must logically stake their future on Japanese engines.

Some time ago the Rickman Brothers sensed the natural logic in an Anglo-Japanese alliance, and consequently keyed their future to Japanese engines. Here in the United States, the Rickman Brothers coupled up nicely with The Vetter Fairing Company, which became the American Rickman distributor. Vetter, the Windjammer company, had a first-rate reputation, a broad dealer network and strong resources—all outside the official British motorcycle establishment in America. In a very fundamental way, the Rickman Kawasaki Z-1 and Rickman Honda 750 Cafe Racers are much more than a couple of British specials. The motorcycles represent the future tense of the British motorcycle industry.

Calling the Rickman Honda a cafe racer shortchanges the bike by suggesting a very limited motorcycle. The Rickman Honda has been optioned right out of the coffee-house-cowboy class, and is a much better motorcycle for its departure. Deleted fairing, high handlebars, relocated foot controls and the Dual Seat Option (which includes a two-up saddle and alternate gas tank) effectively converts the Honda into a sports roadster with some real utility.

For those who insist upon style rather than function, the Rickman Honda can be bought in pure, cafe-racer form. In fact, it *must be* bought that way and then optioned into more normal roadster trim. As cafe racer, the Honda's appearance would follow the Rickman Kawasaki Z-1's rigging, complete with fairing, slender tank, solo seat, rear sets and low clip-on bars. The undiluted Rickman Cafe Racer is a lovely piece of hardware. The soft, flowing shapes are carefully proportioned

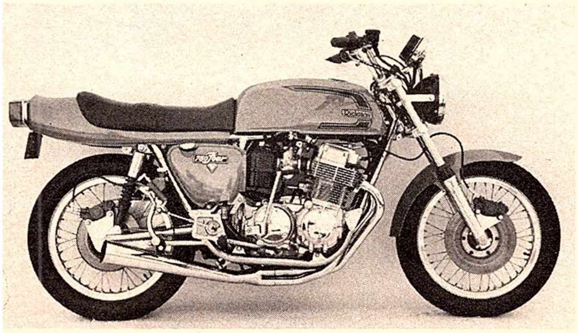




and coordinated to one another, and give the Rickman an easy, handsome grace.

The Rickman's appeal does not lie wholly in the purity of its lines. The frame and swing arm are constructed of Reynolds 531 manganese molybdenum steel which is far stronger material (in its resistance to permanent bending) than the run-of-the-mill mild steel which is universally employed in frame construction.

Rickman's choice of materials—and the use of thick-wall frame members—would be meaningless unless the tubing was assembled into a structure that provided a strong bridge between the steering head and the swing-arm pivot. The butt-end of every joining member is profiled to fit, and then the joints are formed with a special low-melting-point, high-strength bronze. This process leaves all the brazed joints with very neat fillets.



The Rickman swing arm has no conventional chain adjusters. The aft end of the swing arm holds the rear axle in a single, rigid position, absolutely parallel to the swing-arm pin. Chain adjustment is made at the swing-arm pivot. To alter the chain tension, one installs a different pair of positioning discs which have eccentric holes to locate the pivot bolt. The Rickman kit comes with a box of paired positioning discs.

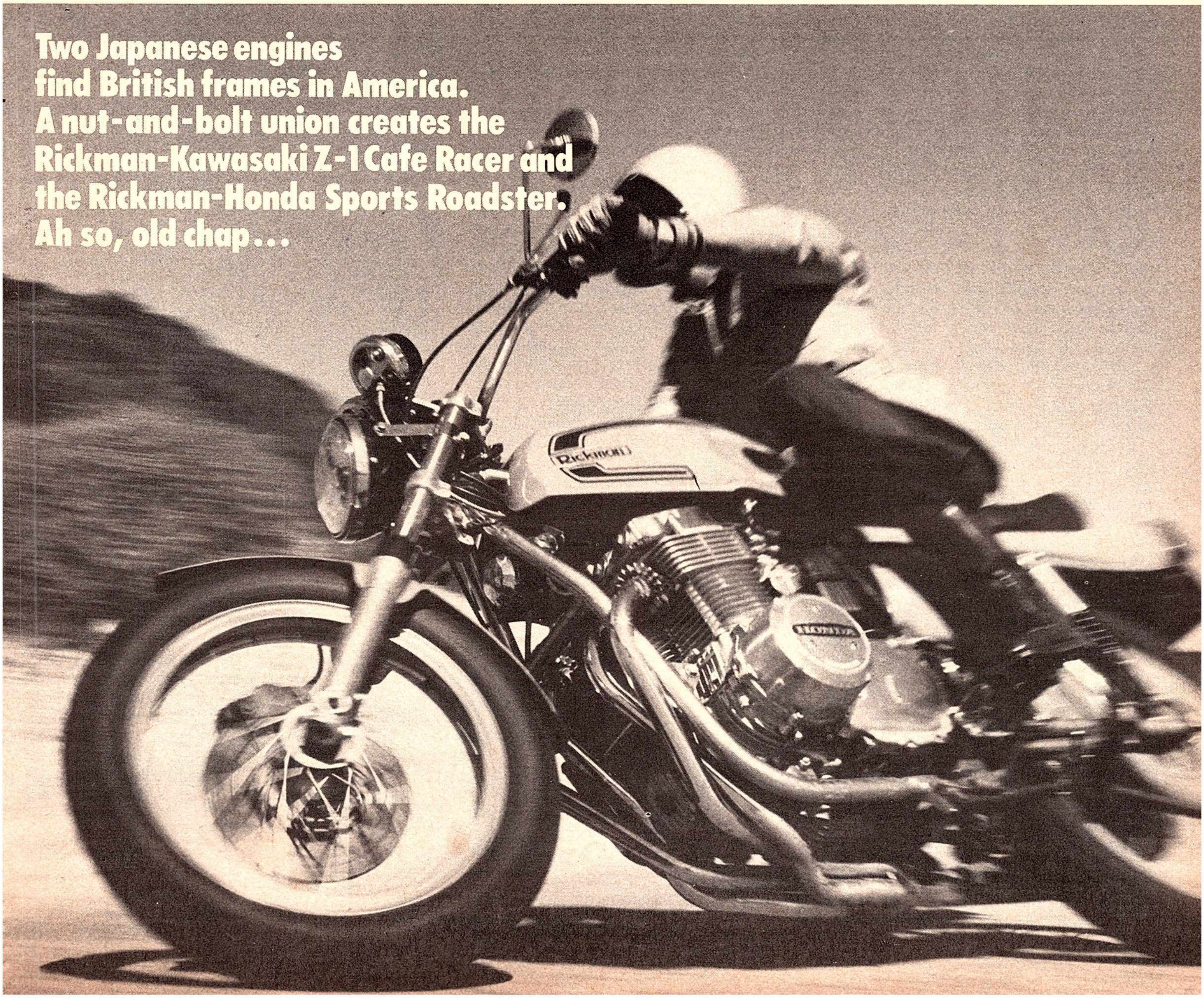
The swing arm holds Rickman's own hub which has no cush-drive. The hub laces to a Borrani WM3 alloy rim that mounts a 4.25/85 *x* 18 Dunlop TT-100 tire. The rear disc system is comprised of a 10-inch disc, Lockheed caliper and an alloy caliper-carrier. A pair of Girling shocks regulate rear wheel action.

Up front the new Rickman Betor fork keeps the front wheel in control. Rickman has switched from its own fork (with 41mm tubes, as fitted to *Cycle's* test Rickman Z-1) to a Betor-built item (39mm tubes) so that twin dual-actuating calipers can be used in the future without spreading the fork legs too far apart. Betor builds the fork to Rickman specifications, and a dual disc system is in the project pipeline right now. Meanwhile, the single front disc has been sized up one inch—it's now 11 inches in diameter. The disc bolts to the Rickman front hub; a 4.10 *x* 18 Dunlop tire covers the WM2 Borrani alloy rim.

The fiberglass work, with the possible exception of selected German and American components, is the best you can buy. The colors (orange for Honda; lime green for Kawasaki) are impregnated in the jell coat. Should you surface-scratch the fiberglass, some judicious sanding and polishing will restore the finish. The owner won't entirely escape the paint business since he must re-do his own side covers to harmonize with the Rickman colors.

The cosmetics aren't perfect. The decals (Rickman logo and stripping) loosen and lift; the transfers lose their adhesion under normal wear and tear, expo-

## Two Japanese engines find British frames in America. A nut-and-bolt union creates the Rickman-Kawasaki Z-1 Cafe Racer and the Rickman-Honda Sports Roadster. Ah so, old chap...



sure to gasoline, the great outdoors and high-pressure washing.

The most disappointing lapse in quality control appeared on the Rickman Honda. The nickel-plating flaked off of a couple of frame tubes; alas, these members were open to view and easily noticed. Apparently the surface had been inadequately prepared before plating, and these areas gradually developed something which looked like a skin disease. Since no remedial steps except replating exist, the gravity of this peeling should be obvious. A painted frame can always be touched up; plated metal forces you back to Step One.

The observant customer will not find himself driven back to that Step-One position. Since the Rickman is a kit bike that the customer assembles, he can inspect his kit before buying, or negotiate refusal rights in case of a special order. While a few Rickman enthusiasts might buy on spontaneous passion, as a rule special-frame buyers are likely to be icy sticklers for perfection, instantly offended by splotchy plating.

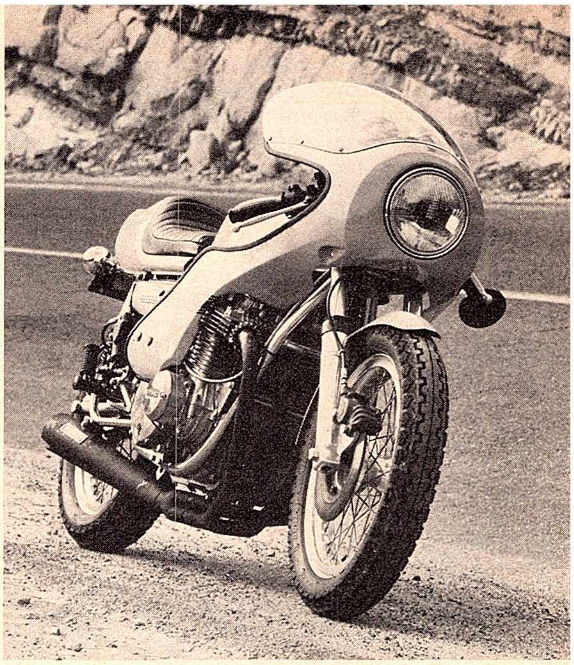
To construct a Rickman Honda roadster, one should begin with the basic Rickman CR kit and K-series 750 Honda. The test bike, as supplied by The Vetter Fairing Company, had a Honda CB-750F Super Sport engine. The late model powerplant was a natural pick; the Super Sport unit has an eight-horsepower edge on the K-model. But the Rickman running gear was designed before the introduction of the Honda Super Sport. For that reason there are several items from the F-bike which are not compatible with the Rickman kit: oil tank, exhaust system, battery box, gauge/ignition switch module, handlebar switches and wiring harness. Larry Coolidge, the Rickman Technical Specialist at The Vetter Company, pulled these parts off a Honda CB-750 K4 roadster, except the exhaust system which is a standard Bassani four-into-one. Although the tucked-under system rules out the center stand, the Bassani won't ground—and it is acceptably quiet.

For the time being, the paying customer who wants a Rickman two-up roadster will probably have more Rickman parts than he really wants. The first $1735 buys the Cafe Racer; $1987 is the tag for the Cafe Racer *plus* the Dual Seat option. But you're not finished yet: you still need a fork crown to which normal bars can be attached ($68.98); or a handlebar-clamp adapter kit, which requires that you drill and tap four holes but costs only $12.60; handlebars ($13.95); headlight arms ($9.00 ea.); hardware to relocate the pegs ($86.98); and (if you want it) the Bassani exhaust system ($160.00).

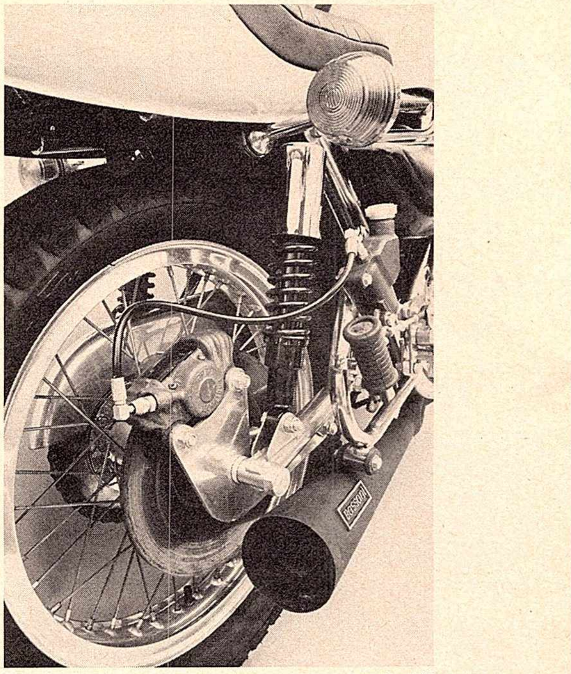
While you may be able to bolt the bike together with standard tools without hacking, sawing, welding and other jiggery-pokery, you'll be in the used motorcycle parts business for a time. You'll have left-over Rickman parts (rearsets, clip-ons, fairing, solo tank and seat) and extra Honda parts.

There are at least three ways to do the Rickman project, and all of them require horse-trader instincts unless you're prepared to own a very expensive Rickman. 1) Buy a wrecked CB-750 K-model (or maybe you've wrecked your own) and sell the left-over parts to a salvage yard. 2) Buy only the Honda parts you need at a salvage yard. 3) Cut a very detailed deal with a motorcycle agency which will order the kit, sell you a new or used Honda 750, and buy back all unwanted/unneeded parts for their inventory. An expert trader could put himself on the Rickman Honda two-up roadster for under $3000 . . . and have a clean garage. On the other hand, the inexperienced builder could spend more than $4000 on his Rickman project and still have a garageful of "brand new but extra" Honda and Rickman parts. No matter how you deal, the Rickman Honda will probably cost a thousand dollars more than a new Honda 750 Super Sport.

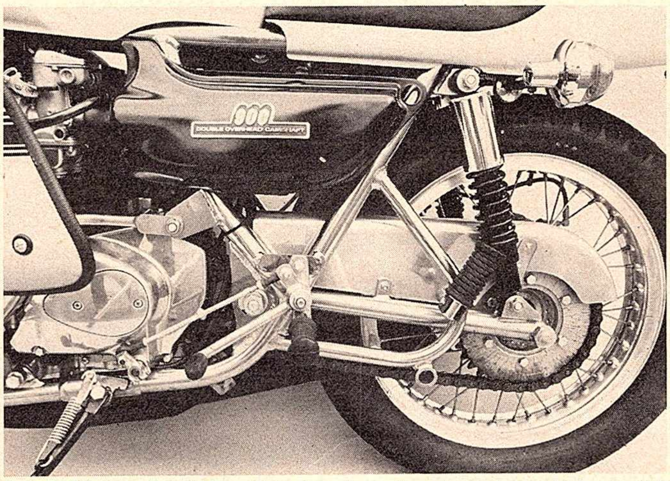
What does the extra thousand dollars really buy? First, the premium buys individuality: if it's important, you'll probably have the only Rickman on your block, or for blocks around. Second, though some might quarrel with the proposition, the Rickman bikes are more handsome motorcycles than their standard counterparts. Third, the Rickman derivatives are lighter than the originals. At 475 pounds, the Rickman Honda is fully 63 pounds lighter than Honda's Super Sport. The Rickman Kawasaki weighs 479 pounds,



## Rickman-Kawasaki Z-1



*Bassani's Kawasaki pipe saves weight but it still touches down, though less so than stock Z-1 pipes.*



*Soft molding on the fairing eliminates sharp fiberglass edges which can nick the rider. Shift linkage uses small heim joints at both ends.*

*The Z-1 engine (about 22 inches wide) hangs out on the left side. Mounted lower than stock, engine presents a clearance problem for whip-it-on riders.*

and that's 65 pounds under the Z-1. These differences are somewhat exaggerated because *Cycle's* test bikes had collector exhausts which are substantially lighter than the stock systems. Nevertheless, the Rickman bikes *are* lighter, and fewer pounds translate into more on-the-road performance. Finally, the Rickman hypenates generally handle better than the Japanese originals; at highly illegal sports-cornering speeds (60–90mph), the Rickmans transmit a stronger sense of security to their riders.

The Rickman Honda has a reasonably civilized seating position, although initially the bars seem a little too wide and far forward. The footpegs are a bit far back for long-legged six-footers; it's just too easy to hang your left foot on the peg by the heel. This toe-down attitude comes to an abrupt end in the first quick left hander—your toe is almost rolled under the foot rest.

The tank, or more properly the tank cover, is fairly wide and angles your legs out. Under the shroud, the real steel tank (British law demands it), a slab-sided monster, holds 4.1 gallons. Since the Honda engine returned 44 mpg, running 145 miles before tapping reserve was possible.

The dual saddle, though firm, is nonetheless comfortable. The rub comes with the harsh suspension, which will rattle your eyeballs loose and encourage frequent stops. Gradually the Honda's Rickman-Betor front fork improved, becoming less jolting and more compliant. The Girling shocks remained harsh.

Precise is the single word which describes the Rickman Honda's steering. The bike responds precisely to steering inputs, and it's accurate to the inch on your intended line. A real sense of stability accompanies this cross-hair accuracy. The Rickman Honda never feels uncertain or unreadable in a corner. This does not mean the handling is flawless. With the shock springs set in their lowest pre-load positions, the Rickman Honda would develop a handlebar oscillation through bumpy corners. Cranking up the preload relieved the problem below 60–70 mph, and moved the oscillation behavior up into the seventies and eighties. It should be pointed out that the handlebar oscillation does not intensify into a loose, hinged-in-the-middle wobble, and the handlebar waving isn't particularly frightening. *Cycle* rated Honda's new Super Sport (tested in May 1975) as the best handling Japanese 750 sports bike around, and the Rickman is still a cut above the Honda CB-750F.

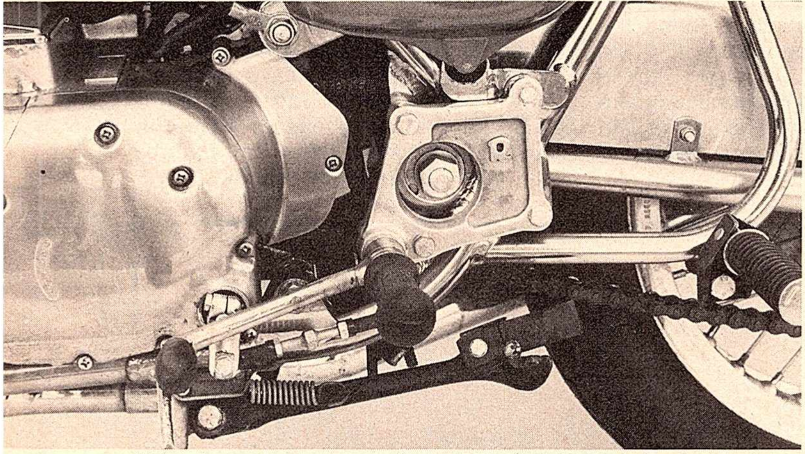
A rider can provoke a suspension oscillation in the standard Honda F-bike with clumsy throttle work in a smooth corner. The Honda engine/transmission unit has a great amount of lash in the drivetrain, especially in the first three gears. The rider should feed the power on and roll it off smoothly. Aboard a standard Honda, you don't want to blitz into a corner, get heeled over, suddenly chop the throttle, and then hit it again. This riding tactic (or lack of it) and the old Honda wind-up/reel-out drivetrain slop can put a stock 750 Honda into a suspension wobble. The Rickman Honda, probably thanks to its stiff suspension, resists this kind of rider-induced galloping—despite the fact that the Rickman has far more lash between the engine shaft and the rear wheel. All the Honda's normal driveline sloppiness is aggravated by the Rickman's lack of any rear drive-cushion assembly. The consequent lurching and yanking becomes unpleasant, at least until you learn to meter the power smoothly.

Rickman's version of the Honda (with the Bassani pipe) has more cornering clearance and better tires than the Honda Super Sport. Grounding isn't a big problem: on the left side the shift lever touches first; on the right the footpeg will eventually make contact. But you can feather the TT-100 rear tire right down to its edges, and you'll feel the tire crawling before anything kisses the pavement.

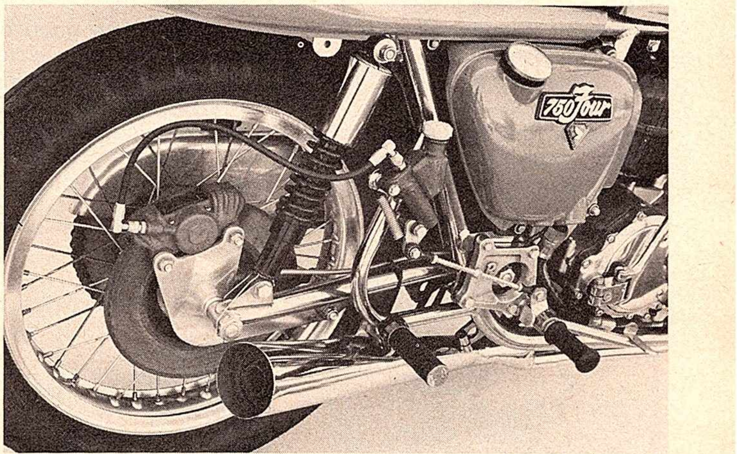
The 11-inch front brake has a reassuring, progressive feel; certainly it's sufficient to retard the 475-pound, 120-mph street bike. The Lockheed rear brake is powerful, but the short tie-rod from the master cylinder leaves the brake lever positioned too high, so the rider gets too much rear-brake action too easily.

As a sports bike, the Rickman Honda

PHOTOGRAPHY: DALE BOLLER, DAVE HOLEMAN, BILL DELANEY

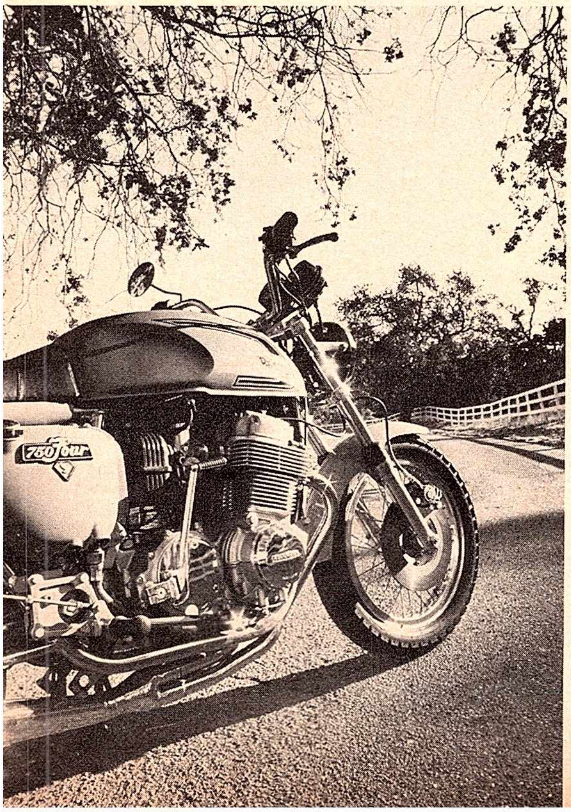


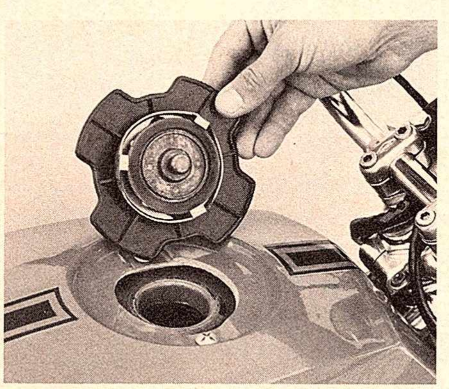
*Hole in footpeg hard ware permits access to pivot pin for chain adjustment.*



*Center stand can't be used with collector. Oil cap can foul a passenger's leg.*

## Rickman - Honda CB-750





*On the Rickman two-seater the large cap opens the steel gas tank under the fiberglass cover. Three screws (one at rear, two at filler cap) attach the shroud to the gas tank. The steel tank holds 4.1 gallons.*

succeeds very well. Like Honda's own Super Sport, the Rickman version has very limited touring capabilities. On its sporting merits (cost aside), the Rickman Honda is a better piece than the CB-750F. The Rickman Honda is also a better road-going motorcycle than the Rickman Kawasaki Cafe Racer.

The Rickman Kawasaki is an extraordinarily uncomfortable motorcycle. The low bars, rearsets and hard saddle will put a normal-size American in misery after 75 miles. The clip-ons are very low relative to the seat. Not only is the rider in an uncomfortable stretch, he has the feeling he's going downhill—and putting an enormous amount of his weight on the front wheel through his hands. The footpegs are high too; with only 16 inches of vertical distance between the pegs and the saddle, the rider's legs must fold back tightly to fit. The riding position, such as it is, seems scaled to very supple human bodies under five-nine. Not one *Cycle* editor fit the full-tilt Rickman Cafe Racer.

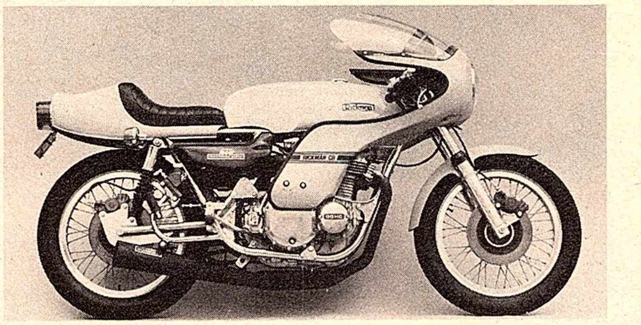
You shouldn't buy the clip-on version of the Rickman without trying the riding position. Before you spring, you should be convinced that your body fits into the CR scheme of things, or that you can modify the riding position to suit your physical dimensions.

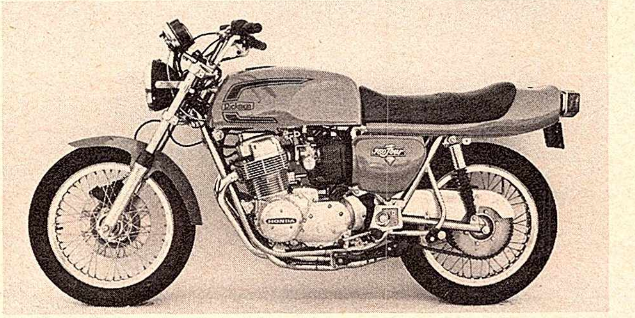
Because the Rickman Kawasaki is a rolling torture rack for six-footers, it's difficult to ride the machine really hard. The bike is very stable in cornering modes, but it also responds quickly to rider inputs. Six-footers are literally wedged on the bike; and when the stiff suspension hits a bump, the shock proceeds through rider's body and into the handlebars, whereupon the Rickman reacts by altering its line in the corner. If you're a full-sized American, there's no easy way to keep yourself from transmitting these unwanted inputs back into the motorcycle. Small, agile riders might not have this problem, but big ones do.

Riders who really enjoy blazing down the road should know a couple more things about the Rickman Kawasaki. You should mount a four-into-one exhaust system which will give more ground clearance than the stock Kawasaki pipes. Our test bike had a Bassani prototype collector, which allowed greater lean angles than stock Z-1 pipes and mufflers. Nevertheless, on bumpy, tight or off-camber mountain roads the Bassani pipe would ground. The Rickman chassis carries the Kawasaki engine five-eighths of an inch lower to the ground than the standard Z-1 frame. Since determined riders (on good tires) can ground the left-side dyno cover on a stock Z-1, exactly the same thing can happen with the Rickman. In fact, California mountain-road riders who already have Rickman Z-1s put ground clearance at the top of their complaint list.

*Cycle's* preferences should be clear. We like the Rickman Honda with its Dual Seat Option much better than the Rickman Kawasaki. The Honda had more ground clearance and offered far more comfort. And the Honda could be ridden harder with considerably less effort. You can buy the Dual Seat Option for the Rickman Kawasaki; and were it our money on the counter, we'd have the Kawasaki no other way. Depending upon how hard you scratch on the public roads, you still may encounter a clearance problem with the Kawasaki dyno cover, and you should be prepared to cope with this problem.

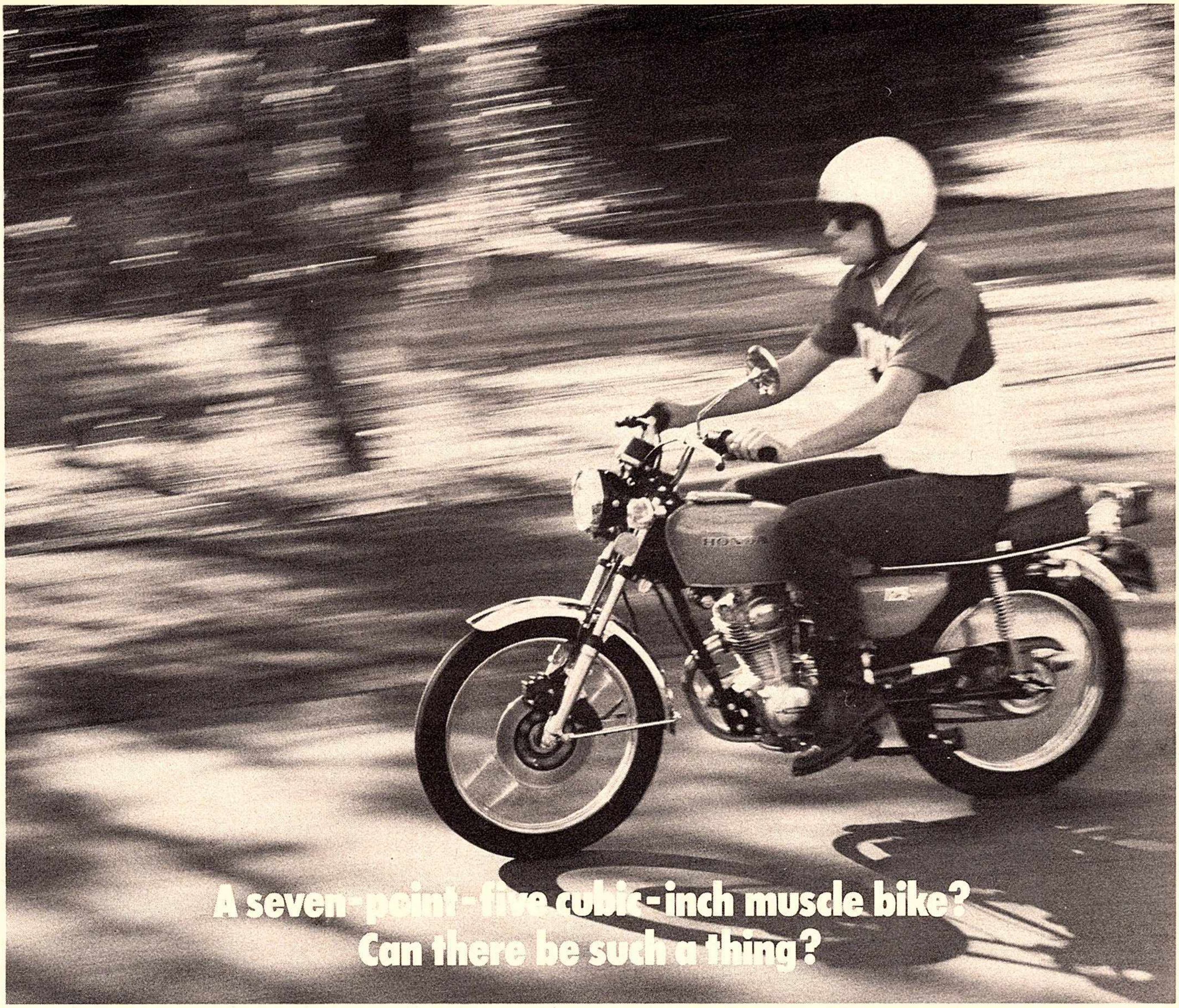
By reputation, England has long been the place where good handling motorcycles have been built. For the most part those good British earholers were light motorcycles which had modest horsepower—good starting points for fine curve-benders. But the future British motorcycle industry must deal with ever-increasing horsepower. A Kawasaki 903 in perfect fettle is wide, heavy and 80-horsepower strong—exactly the characteristics which sabotage championship handling. Whatever the problems, tomorrow's British motorcycle industry will be bound to one-liter Japanese monster-motors. The British must make the horsepower giants handle, do it before the Japanese, and do it better. It's the only way the British will survive. And *that*, be sure, the Rickman Brothers know. ◉





## KAWASAKI Z-1/HONDA CB-750 RICKMAN CAFE RACER KITS

| | |
|---|---|
| Price, suggested retail | Cafe Racer $1735; with Dual Seat Option $1987; see text for other equipment |
| Tire, front | 4.10 x 18 Dunlop TT-100 |
| rear | 4.25/85 x 18 Dunlop TT-100 |
| Brake, front | Honda: 11 x 1.5 in. x 2 (280mm x 38mm x 2)<br>Kawasaki: 10 x 1.5 in. x 2 (254mm x 38mm x 2) |
| rear | Honda/Kawasaki: 10 x 1.5 in. x 2 (254mm x 38mm x 2) |
| Brake swept area | Honda: 169.5 sq. in. (1093 sq. cm)<br>Kawasaki: 160 sq. in. (1032 sq. cm) |
| Specific brake loading | Honda: 3.8 lbs./sq. in. at test weight<br>Kawasaki: 4.0 lbs./sq. in. at test weight |
| Fuel capacity | Honda: 4.1 gal. (15.5 liters)<br>Kawasaki: 4.8 gal. (18.2 liters) |
| Wheelbase | Honda/Kawasaki: 56.5 in. (143.5 cm) |
| Rake/Trail | Honda: 29°/4.5 in.<br>Kawasaki: 28°/4.0 in. |
| Seat height | Honda/Kawasaki: 32 in. (81.3 cm) |
| Ground clearance | Honda: 4.75 in. (12 cm) with Bassani exhaust<br>Kawasaki: 3.75 in. (9.5 cm) with Bassani exhaust |
| Curb weight | Honda: 475 lbs. (215 kg)<br>Kawasaki: 479 lbs. (217 kg) |
| Test weight | Honda: 640 lbs. (290 kg)<br>Kawasaki: 644 lbs. (292 kg) |
| Standing start ¼-mile | Honda: 13.94 sec.; 92.87 mph<br>Kawasaki: 12.24 sec.; 108.17 mph |
| Average fuel consumption | Honda: 44 mpg<br>Kawasaki: 42 mpg |



A seven-point-five cubic-inch muscle bike? Can there be such a thing?

# HONDA CB-125 S3

● The Great Gas Hope of Motorcycling has long since fallen in America. During those hornswoggling days of the Energy Crisis, some motorcycle marketeers peered into their crystal balls and saw millions of Americans humming off to work on their 75-mile-per-gallon tiddlers. As events would demonstrate, those soothsayers had seen nothing more significant than reflected hopes; later the cups and warehouses of all the prophets ran over with little commuter bikes. Though the price of gasoline rose to sixty-cents-and-beyond, in the long run Yankees remained faithful to four-wheelers. When 75-mpg economy threatened bodily comfort, Americans didn't give a hoot about economy. And they weren't getting 75 mpg anyway.

The mileage economy of most small motorcycles is illusionary. True, the Honda 125 four-stroke will record 68 miles per gallon. But tea-cup two-stroke engines have voracious appetites; indeed, the Yamaha 60 and Kawasaki 90 produce mileage figures in the mid-forties. Such numbers result from running these engines wide-freaking-open in order to produce reasonable speeds in city and suburban traffic. That sort of mileage is hardly sensational—your average shepherd can put a Kawasaki Z-1 or Suzuki GT-550 or Honda Civic car into the forties. So much for the snappy patter about gas mileage.

Those Little Monsters of the Energy Crisis (Suzuki 50, Yamaha 60, Kawasaki 90 and the Honda 125) which *Cycle* tested in May, 1974, have either grown up or dropped out. The Suzuki 50 has gone, and the Kawasaki 90 has grown some more engine. Yamaha replaced their 60cc single with the much improved RS-100, and Honda re-engineered their 125, trying to scare up enough horsepower to give the bike some sporting pretentions. Performance is now spoken in Tiddler Corner,

**Cycle Test**

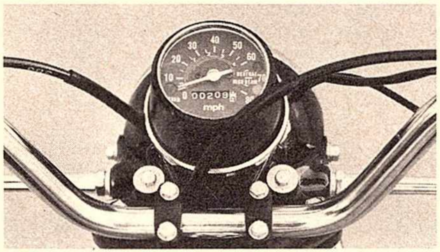
and thus the Miser-Mice of 1974 have become the Sporting Jerboas of 1976.

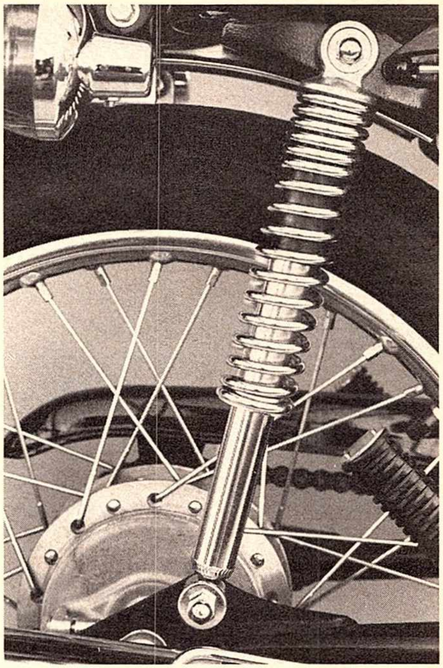
Honda's newest street 125 has more horsepower, and less, then its forerunners. Only at 9000 rpm-and-beyond does the S3 show more power on a dynomometer than the S1 tested in *Cycle,* May 1974. At 9000 rpm the difference is one-third horsepower, and that margin nearly doubles at 9500 rpm and 10,000 rpm. The S3 is more than a half-horsepower stronger at 10,500 rpm than the S1. Though it's fading at the 11,000 mark, the S3 still produces 9.71 horsepower there, and then sags to 8.09 at 11,500. But the old S1 was stronger below 9000 rpm; for example, the 1974 version had a .8-horsepower advantage at 6500 rpm. Honda has just concentrated the S3's power at the top of the rev-range—where a small bike engine operates most of the time anyway. Other factors may also help to account for the diminished return in the mid-rpm band: the super-quiet muffler and the new atomizer baffle in the intake tract of the cylinder head.

To shift the power curve Honda reworked the 125 engine considerably. It's a typical Honda re-do: all the engine changes have been carefully orchestrated; there's nothing expedient about it. Carburetor size has been increased to 24mm (up from 22mm), allowing the engine to breathe better at the top of its rpm range. However, generous intake ports have always carried a penalty: at moderate engine speeds the air velocity in the intake tract usually is so low that the atomized fuel, picked up in the air stream through the carburetor, falls out before reaching the combustion chamber.

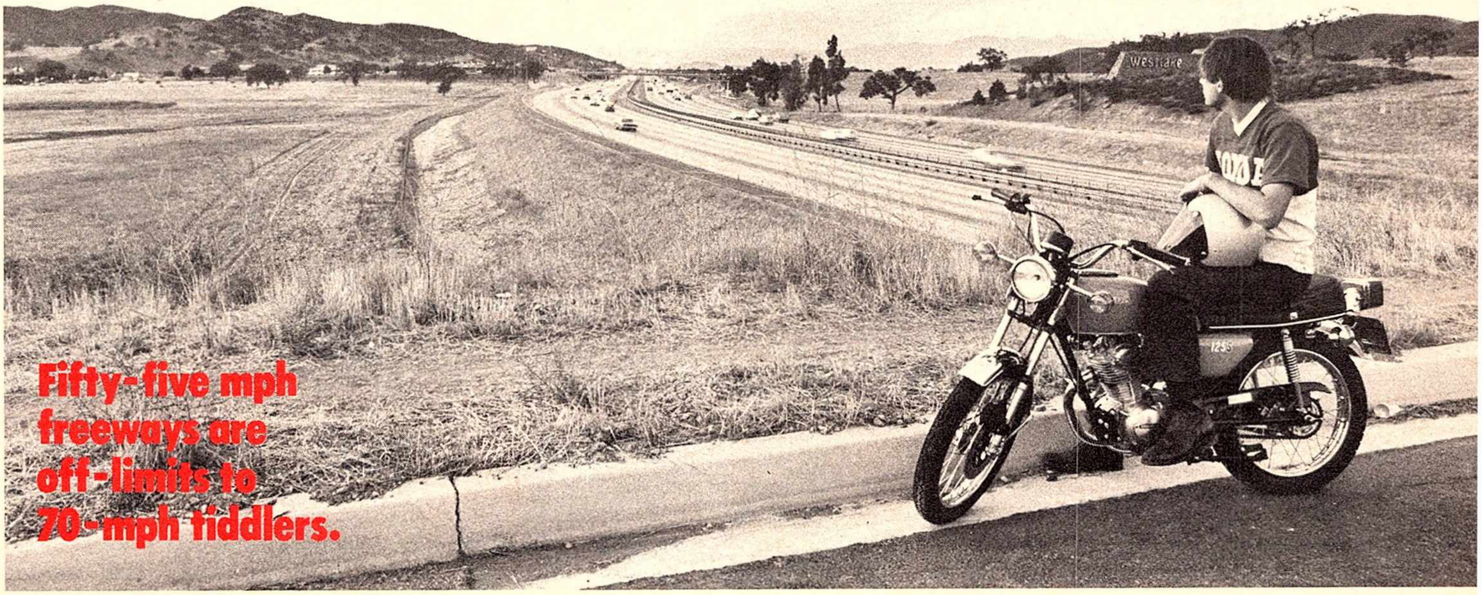
Honda, never at a loss for clever solutions, has maintained the air velocity in their big-port 125 by the use of an atomizer baffle. This plate fits into the rubber insulator which connects the carburetor to the cylinder head. The horizontal baffle plate splits the passageway inside the insulator into two parts; the lower section of the passage has a slightly larger cross-sectional area than the upper passage. With the throttle slide opened to 60 or 70 per cent of its travel, the fuel/air mix flows only through the lower passage, and at greater velocity (thanks to the restricted area) than through a wide-open 24mm throat.

Consequently, at part throttle the S3 carburetion system atomizes the fuel better, and holds the gasoline droplets in the air stream. When the throttle is opened full whack, the fuel/air mix rushes through both passages. Although it's in the way, the atomizer plate does not seriously disrupt the air flow at full throttle.

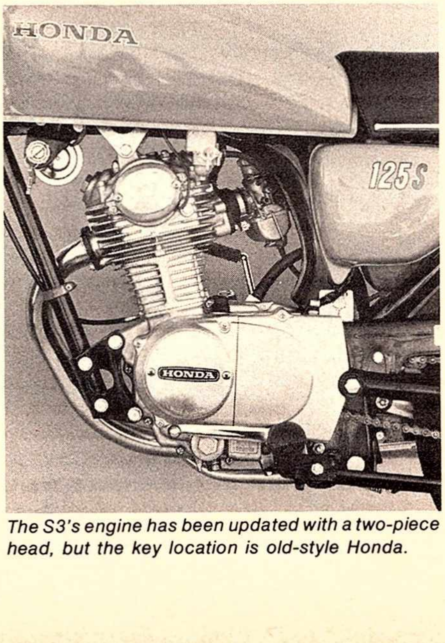

*The tachometer is gone; in its stead there are gearband arcs painted on the speedometer face.*


*The shock absorbers have no discernible damping and no adjustment for preloading the springs.*

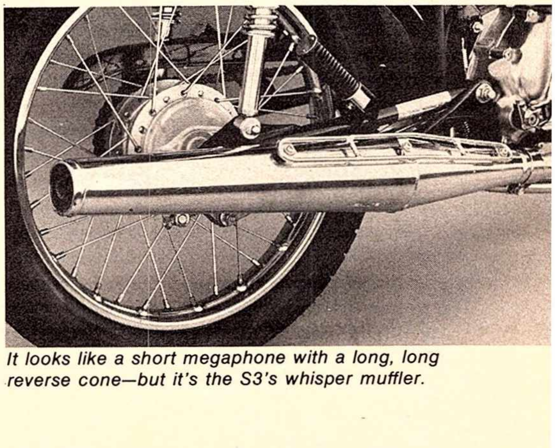
PHOTOGRAPHY: MICHAEL ZAVELL



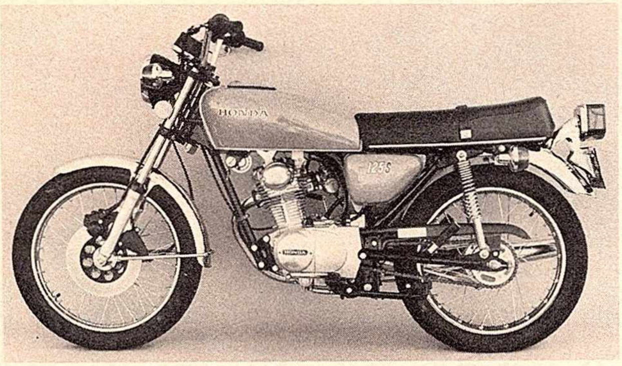
**Fifty-five mph freeways are off-limits to 70-mph tiddlers.**



*The S3's engine has been updated with a two-piece head, but the key location is old-style Honda.*

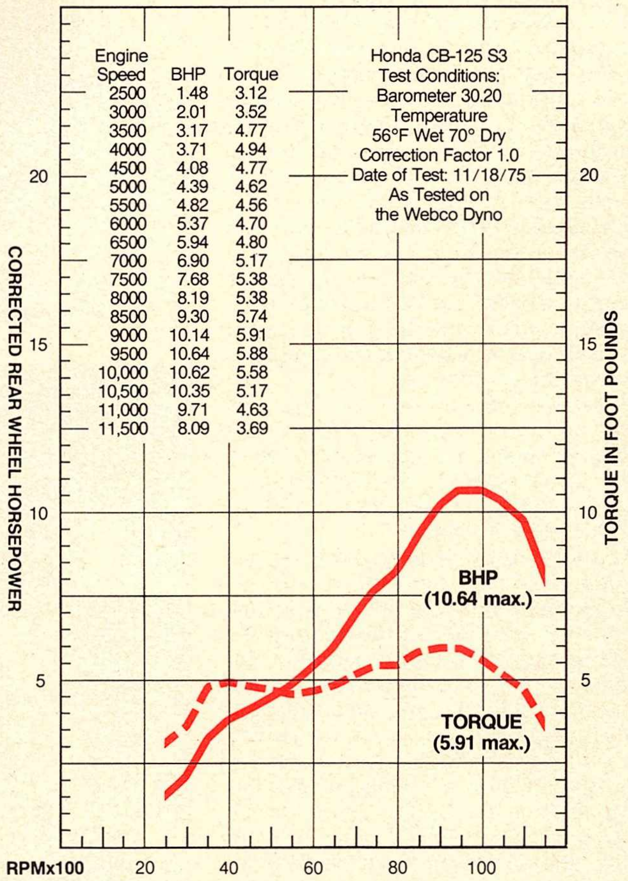

*It looks like a short megaphone with a long, long reverse cone—but it's the S3's whisper muffler.*

# HONDA CB-125 S3



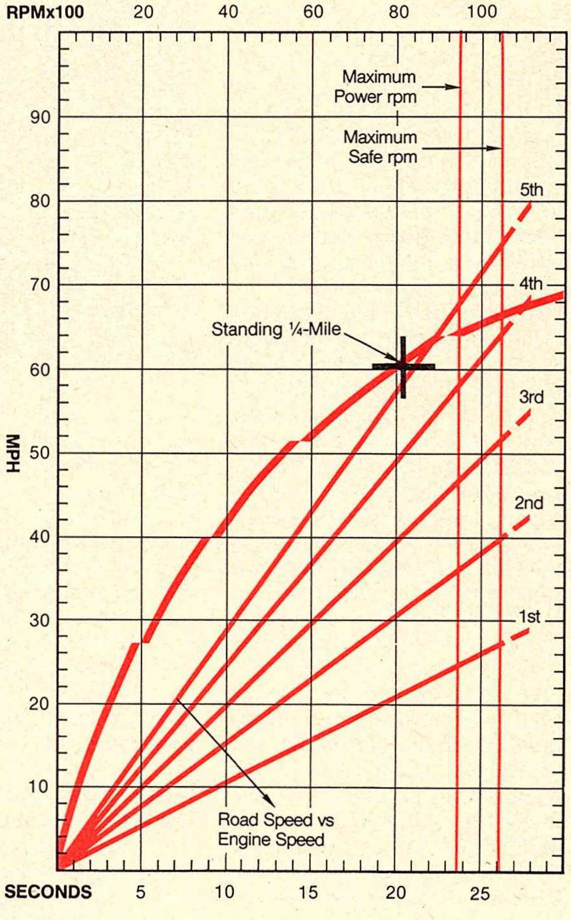
### HONDA CB-125 S3

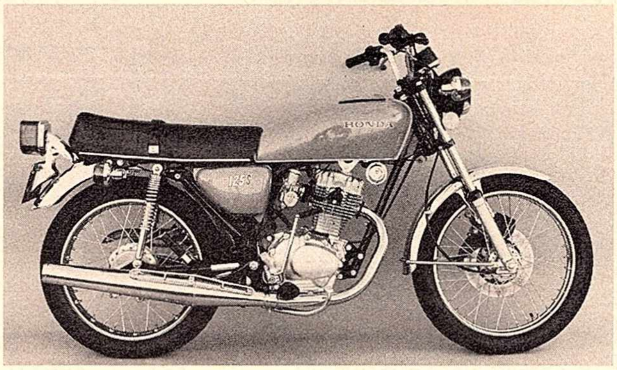
| | |
|---|---|
| Price, suggested retail West Coast | $649 |
| Tire, front | 2.75 x 18 Bridgestone Super 10 Rib |
| rear | 3.00 x 17 Bridgestone Super 10 Universal |
| Brake, front | 1.43 x 9.38 in. x 2 (36mm x 240mm x 2) |
| rear | 4.33 x 0.97 in. (110mm x 25mm) |
| Brake swept area | 84.3 sq. in. (543 sq. cm) |
| Specific brake loading | 4.70 lbs./sq. in. |
| Engine type | Four-stroke SOHC single |
| Bore and stroke | 2.224 x 1.949 in. (56.5mm x 49.5mm) |
| Piston displacement | 7.56 cu. in. (124cc) |
| Compression ratio | 9.4:1 |
| Carburetion | 1; 24mm Keihin |
| Air filtration | Oiled urethane foam |
| Ignition | Battery and coil |
| Rake/Trail | 27.2 degrees/3.8 in. (9.6cm) |
| Mph/1000 rpm, top gear | 7.1 |
| Fuel capacity | 2.5 gal. (9.5 liters) (including .6 gal. reserve) |
| Oil capacity | 1.1 qt. (1.0 liter) |
| Battery | 6v, 6AH |
| Primary transmission | Straight-cut gears, 4.055 |
| Secondary transmission | 1/2 x 5/16 chain, 2.666 (15/35) |
| Gear ratios, overall | (1) 26.19 (2) 17.80 (3) 13.72 (4) 11.10 (5) 9.46 |
| Wheelbase | 47.4 in. (120.4cm) |
| Seat height | 27.5 in. (70cm) |
| Ground clearance | 5.75 in. (14.6cm) |
| Curb weight | 226 lbs. (102.5kg) |
| Test weight | 396 lbs. (179.6kg) |
| Instruments | Speedometer, odometer |
| Standing start ¼-mile | 20.52 sec @ 60.32 mph |
| Average fuel consumption | 68 mpg |
| Speedometer error | 30 mph actual 28.53 |



| Engine Speed | BHP | Torque |
|---|---|---|
| 2500 | 1.48 | 3.12 |
| 3000 | 2.01 | 3.52 |
| 3500 | 3.17 | 4.77 |
| 4000 | 3.71 | 4.94 |
| 4500 | 4.08 | 4.77 |
| 5000 | 4.39 | 4.62 |
| 5500 | 4.82 | 4.56 |
| 6000 | 5.37 | 4.70 |
| 6500 | 5.94 | 4.80 |
| 7000 | 6.90 | 5.17 |
| 7500 | 7.68 | 5.38 |
| 8000 | 8.19 | 5.38 |
| 8500 | 9.30 | 5.74 |
| 9000 | 10.14 | 5.91 |
| 9500 | 10.64 | 5.88 |
| 10,000 | 10.62 | 5.58 |
| 10,500 | 10.35 | 5.17 |
| 11,000 | 9.71 | 4.63 |
| 11,500 | 8.09 | 3.69 |

Honda CB-125 S3
Test Conditions:
Barometer 30.20
Temperature
56°F Wet 70° Dry
Correction Factor 1.0
Date of Test: 11/18/75
As Tested on
the Webco Dyno





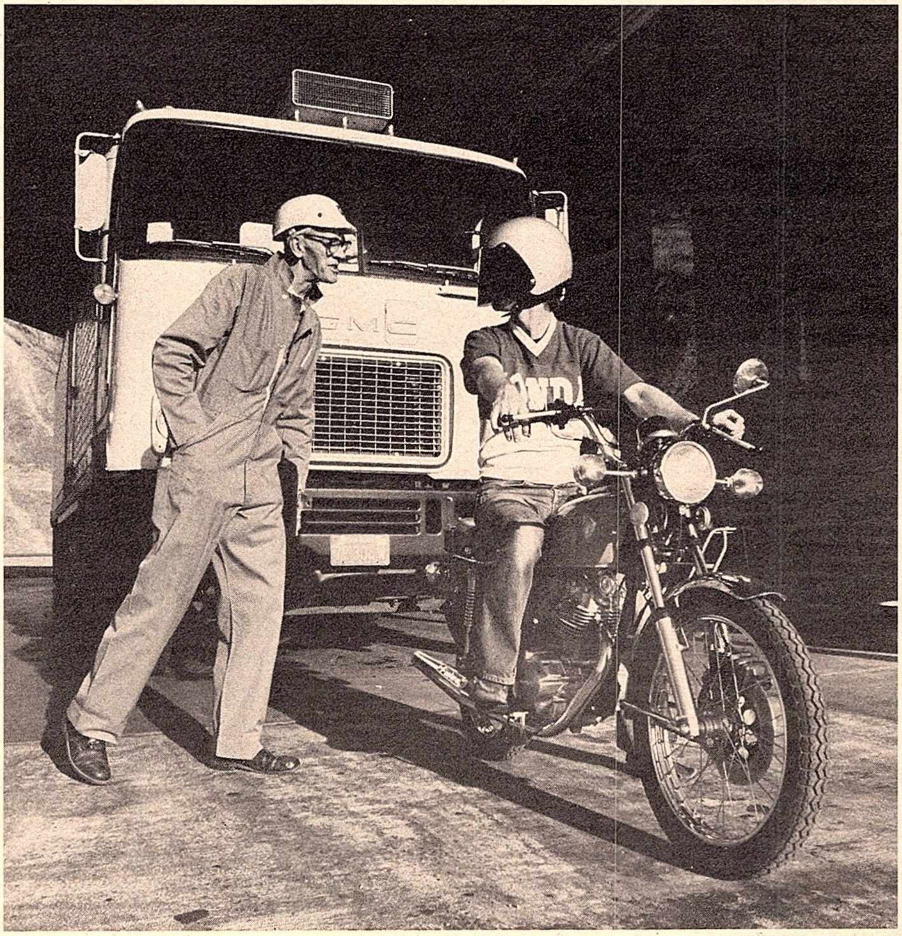
# HONDA CB-125 S3

The cylinderhead has likewise been changed from previous models. The S1 and S2 Honda singles had one-piece cylinderheads in which the camshafts went into the head through a left-side doorway. The S3 cylinderhead has a removeable top, though it's still possible to insert the cam through the doorway. Like the old one-piece cylinderhead, plain bearings support the camshaft in the new head. The two-piece head, which has port and valve design similar to XL-125, brings the CB-125 S3 into line with current Honda practice—most of the firm's singles have two-piece heads. If nothing else, the design is probably easier and more economical to manufacture.

Under the cylinderhead, the bore has been increased by a half-millimeter to 56.5mm, bringing the displacement up to 124cc (from 122cc). The compression has fallen off; at 9.4:1 it's one-tenth lower than the old 9.5:1 figure.

Far more work has gone into the re-arrangement of the gearbox ratios. Although the primary gear ratio is unchanged (4.055), not all the gearbox alterations match the peaky nature of the engine. Compared to the torquier S1, the gear staging has been spaced out, except in the three-to-four slot. There the gearing has been tightened a bit, so that the engine doesn't drop a bundle of revs between shifts in the top two gears. Honda revised the final drive ratio (2.666 to 2.333), and as a result the more powerful S3 pulls a higher overall gearing than its predecessors.

The new exhaust system, also part of the package responsible for the 125's reshaped power, resembles the megaphone-and-cigar silencer found on Honda's 750 Super Sport. Below six or seven grand, the hardware snuffs out almost all combustion sounds, and at idle the rider must double-check to be sure the engine is alive. In the upper rpm-range, the rider is treated to a determined, throaty roar which is nonetheless ironed out into a mellow, inoffensive tone.



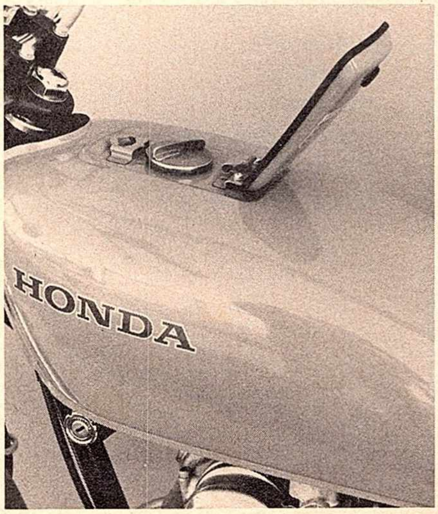
Only in its appearance could the Honda CB-125 S3 be considered an attention-grabber. Its lean, tight looks make the old Honda 125 singles seem both stodgy and baroque with their little plastic plaques, two-tone paint schemes and multiple striping. The S3 appears light and agile, though *Cycle's* certified scales revealed that the 227-pound S3 weighs seven pounds more than the S1 tested in 1974.

The beautifully proportioned tank has a locking trap door which mars the otherwise sleek lines of the tank. Under the door lives a very small gas cap which, when removed, reveals a tiny filler port. At a gas station it's difficult to monitor the gas level because the pump nozzle fills the opening. Lift the nozzle up, and you'll spill some gas. Leave the nozzle inserted and you'll likely produce a gusher, despite a hair-trigger pump hand.

Below and behind the tank are simple and purposeful side-panels, devoid of the usual gimcracks. Honda's good taste unhappily deserted them when they were planning the seat. The saddle, covered in brown vinyl, disrupts—and antagonizes—the color-sensitive eye because brown doesn't harmonize with a black and blue motorcycle. The seat does succeed functionally: it's comfortable. So, too, are the XL-type hand grips, soft and gummy and easy on the hands.

Knowledgeable Hondaphiles will pick up on other changes. The front fork now has exposed tubes and internal springs. But the new fork shares its damping system with the old external-spring/rubber gaiter model. While most Honda street bikes have floating ring dampers in their front forks, the S3 retains the old system which utilizes a separate damper cylinder inside the fork tubes. Although the S3 has some damping in the fork, there is very little or none in the rear shock absorbers, which in practice are comprised of chrome springs over telescoping tubes.

*(Continued on page 94)*



*Under the key-operated trap door resides a small gas cap which makes fill-ups a chore.*

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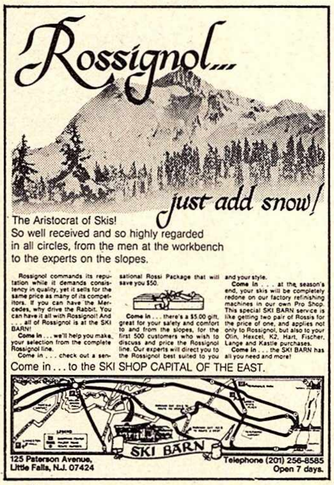

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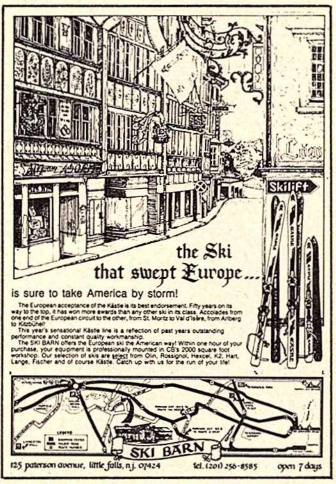

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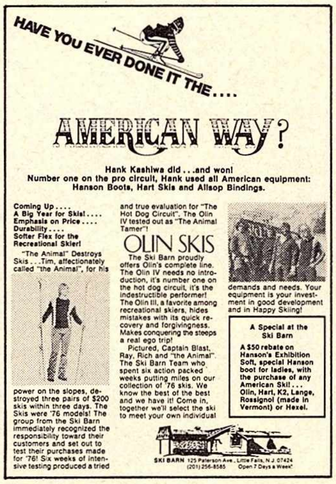

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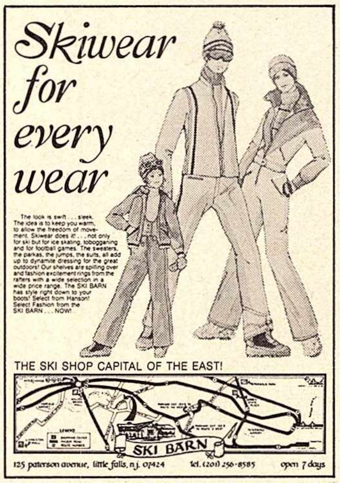

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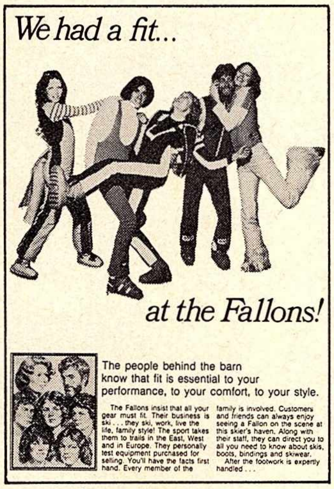

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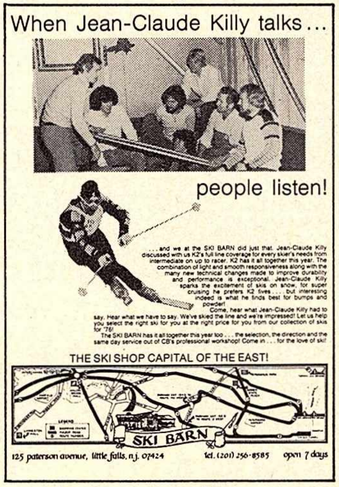

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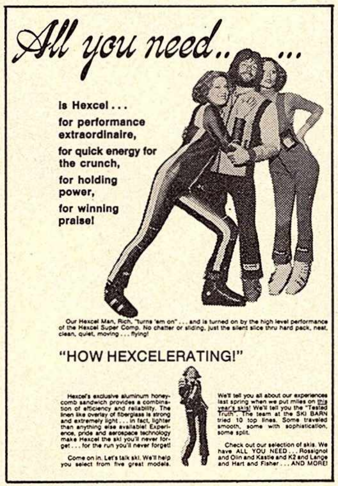

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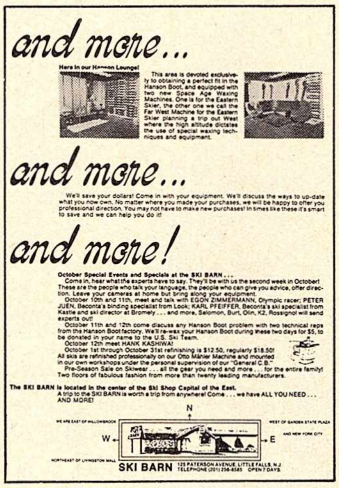

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This area is devoted exclusively to obtaining a perfect fit in the Hanson Boot, and equipped with two new Space Age Waxing Machines. One is for the Eastern Skier, the other one we call the Far West Machine for the Eastern Skier planning a trip out West where the high altitude dictates the use of special waxing techniques and equipment.

and more...

We'll save your dollars! Come in with your equipment. We'll discuss the ways to up-date what you now own. No matter where you made your purchases, we will be happy to offer you professional direction. You may not have to make new purchases! In times like these it's smart to save and we can help you do it!

and more!

**October Special Events and Specials at the SKI BARN . . .**

Come in, hear what the experts have to say. They'll be with us the second week in October! These are the people who talk your language, the people who can give you advice, offer direction. Leave your cameras at home but bring along your equipment.

October 10th and 11th, meet and talk with EGON ZIMMERMANN, Olympic racer; PETER JUEN, Beconta's binding specialist from Look; KARL PFEIFFER, Beconta's ski specialist from Kastle and ski director at Bromely . . . and more, Salomon, Burt, Olin, K2, Rossignol will send experts out!

October 11th and 12th come discuss any Hanson Boot problem with two technical reps from the Hanson Boot factory. We'll re-wax your Hanson Boot during these two days for $5, to be donated in your name to the U.S. Ski Team.

October 12th meet HANK KASHIWA!

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# SKI BARN

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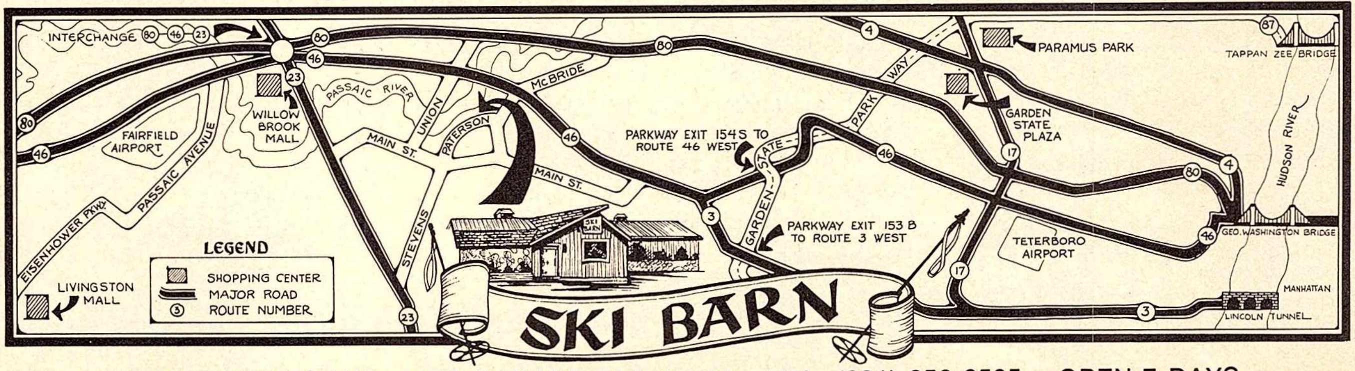

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If it doesn't say DENCO it isn't the chamber that has broken more AHRA Records than all other brands combined.

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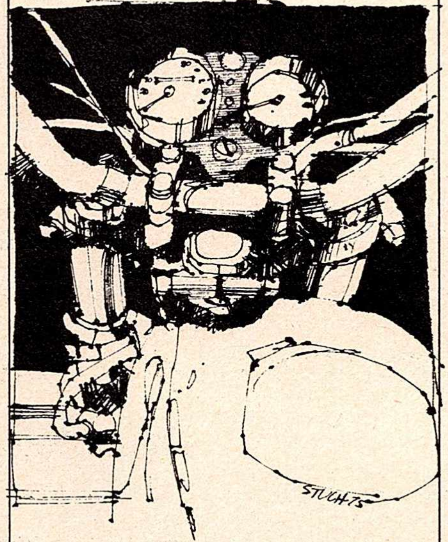
# Cycle Test Index



### 1975

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| BMW R75/5 | *November* |
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| Can-Am 250 GP | *July* |
| Can-Am 175 MX2 | *November* |
| H-D FLH-1200 | *August* |
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| Honda CB-125 S3 | *February* |
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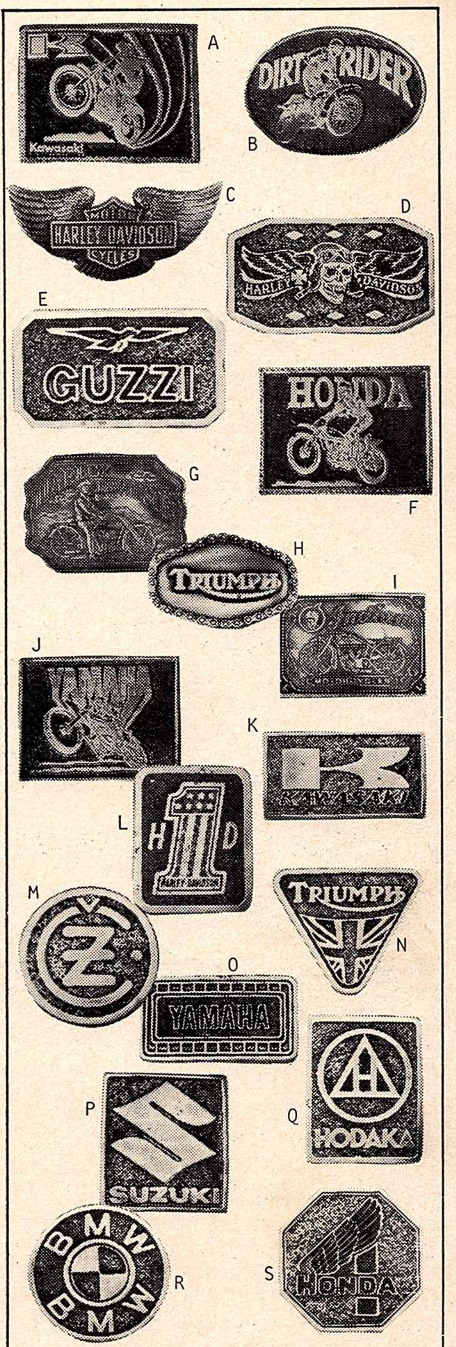

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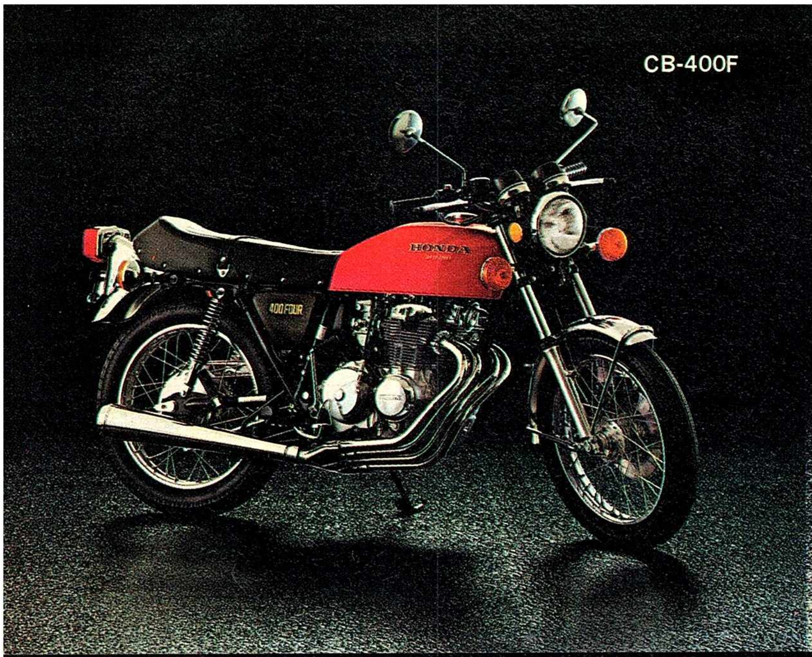
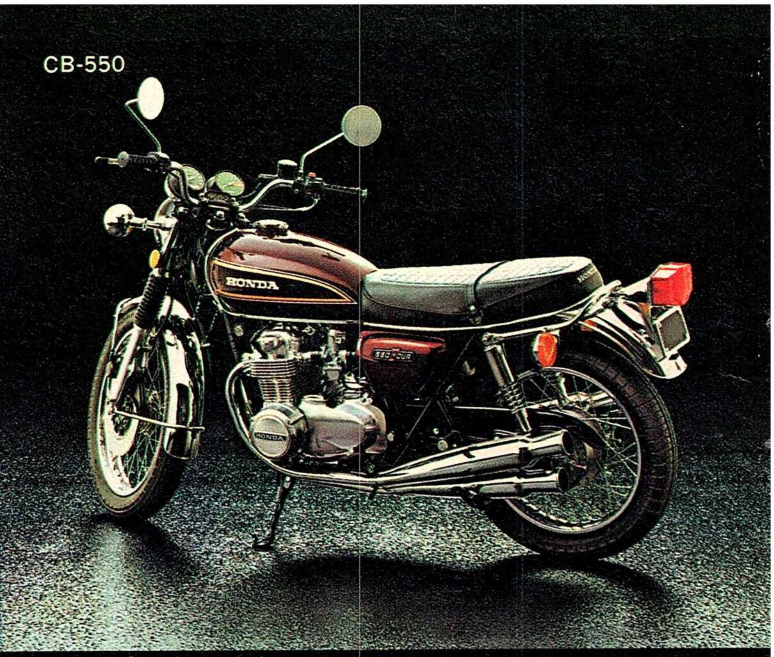
Signature Exp. Date

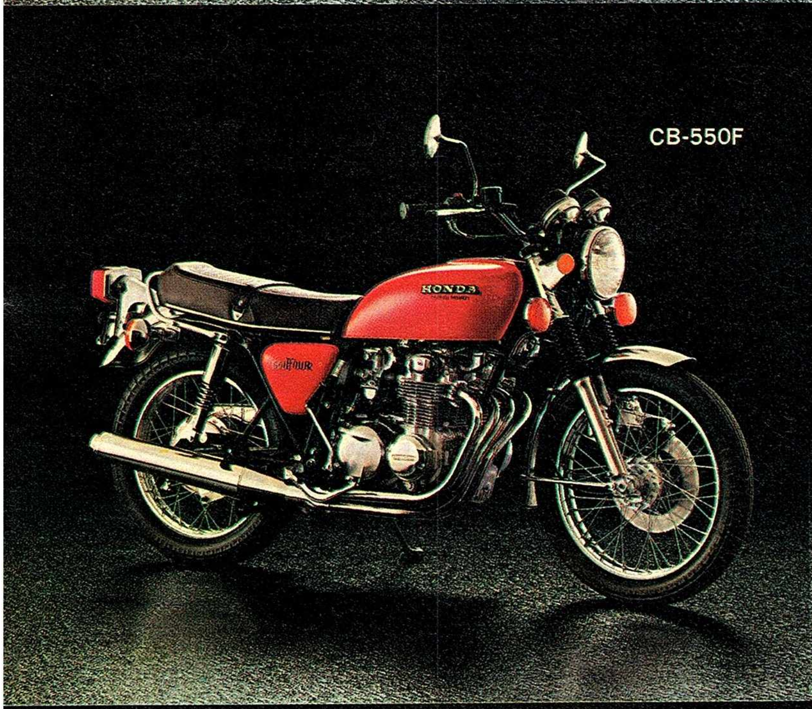
CB-400F



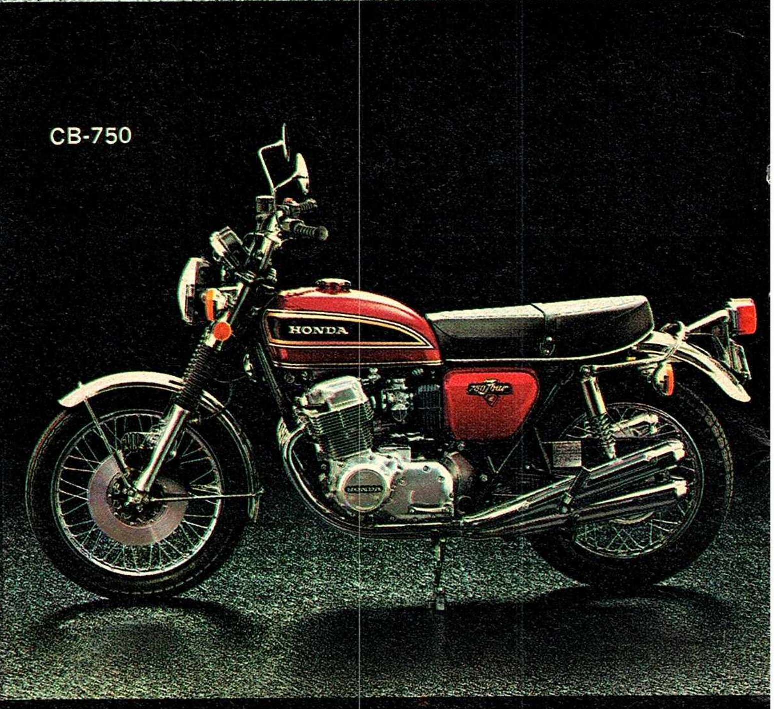
CB-550



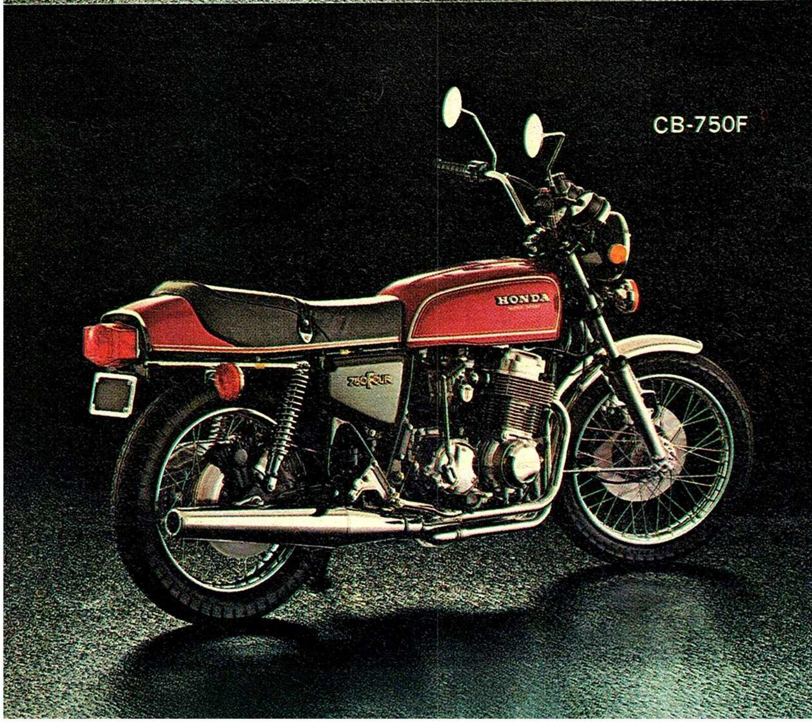
CB-550F



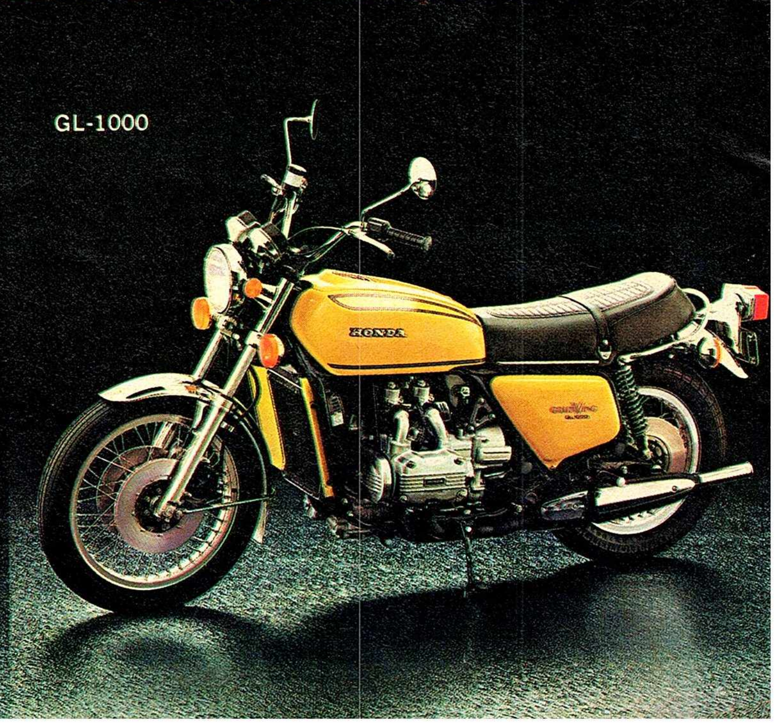
CB-750



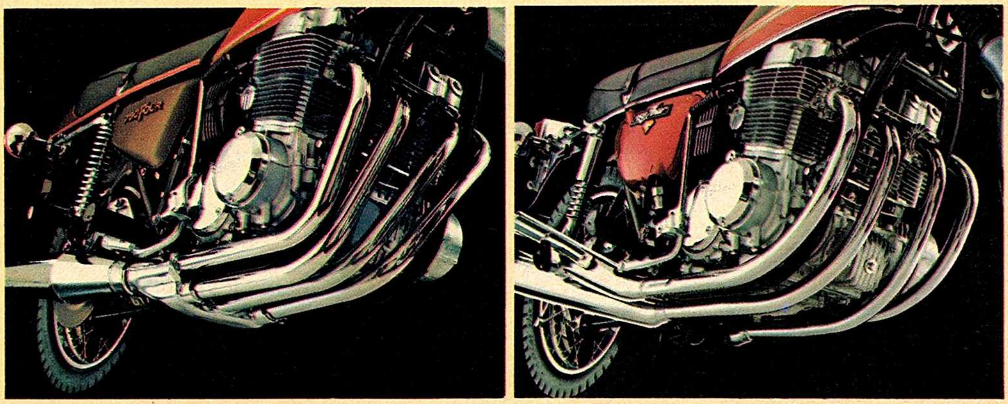
CB-750F



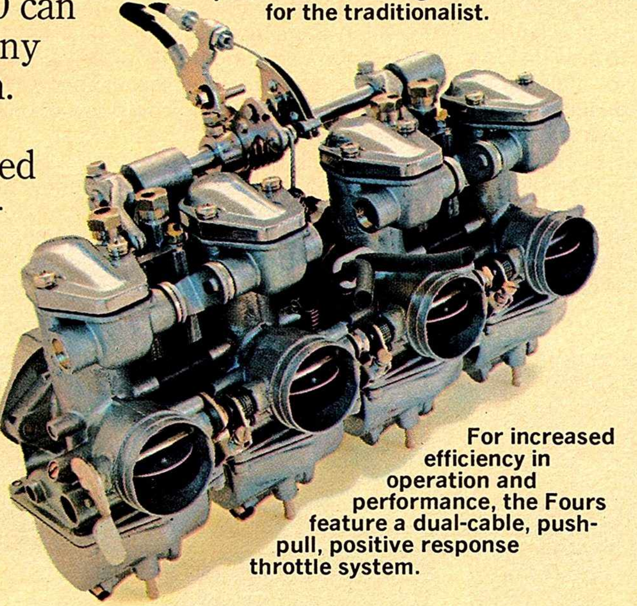
GL-1000



# The Honda Fours.
# America's most popular road bikes.
## (Except with our competition)



Two kinds of exhaust systems for two kinds of riders. The four-into-one (left) adding power and reducing noise. And the four separate pipes version (right) for the traditionalist.



For increased efficiency in operation and performance, the Fours feature a dual-cable, push-pull, positive response throttle system.

Six four-cylinder beauties. The largest selection—from the largest-selling group—of road bikes in America. Bred from years of experience and know-how. The Honda Fours.

The Honda 750, for example. It's the world's biggest seller. No competitive-make 750 can touch its success. In any cylinder configuration.

The CB-750's four-pipe exhaust, renowned performance and handling have made it, and the CB-550, the road bikes for motorcycle traditionalists.

Evolving from that same Honda experience are the four-cylinder "four-into-one" models, the CB-750F, the CB-550F and the CB-400F. Advanced technology and engineering techniques have enabled Honda to increase horsepower and reduce exhaust system weight and engine noise. The powerful CB-750F and CB-550F have rigid frame construction to help provide superb handling. Luxurious. Designed for riders who look to the future. And the uniquely styled CB-400F combines power with purposeful design for truly remarkable handling.

At the pinnacle of motorcycle sophistication is the Honda GL-1000. No other big bike, of any displacement, can match the refinements which Honda experience has built into it. Powerful. Responsive. Virtually vibration-free because of its unique drive shaft system and engine design. It is the ultimate touring machine.

The Honda Fours. Part of a road bike line that outsells *all* other makes. Isn't it time you enjoyed the Honda Fours experience?

Open the locking seat and you'll find a glove box, and the tools in a tray near the battery.

Always wear helmet and eye protection, keep lights on, check local laws. See Yellow Pages for nearest dealer. For brochure: American Honda Motor Co., Inc., Dept BK, Box 50, Gardena, Calif. 90247. Printed in U.S.A. ©1976 AHM.

**CIRCLE NO. 28 ON READER SERVICE PAGE.**

**HONDA**

**First. For good reason.**

● If it's Winter in Minnesota nothing helps. But if it's late Fall or early Spring anywhere else, George Widder's Lectric-Vest can well and truly keep that nip in the air from becoming the kind of bone-deep chill that makes you wish you were doing anything but riding your bike.

Motorcycling in America is a sport. Sports are supposed to be fun. There are few things less fun than tacking down the Interstate at 60mph when the temperature is 40 degrees or lower. Do that for three or four hours, and when you wake up the next morning you'll still be cold.

There are ways to avoid it, of course. Full- or handlebar-fairings help. Ski clothes help. Arctic gloves help. Long Johns help. But we feel that the Lectric-Vest helps more than anything else.

*Cycle* has had two versions of the Lectric-Vest for the better part of a year, and while there remain areas for improvement, the vest has impressed us as a practical, unintrusive, comfortable and effective means by which the brisk-weather rider can enjoy his sport, and his bike, when he would otherwise be lounging around the living room watching TV or freezing his buns off tramping down the open road.

If you can keep your torso warm you stay warm all over—thus goes the thinking behind the vest, which obviously offers no provision for electrically warming the arms or hands. It comes in sizes 36, 38, 40, 42, 44, 46, and 48, is exceptionally light-weight and bulk-free, and has a urethane coating for wind-proofing and easy cleaning. The vest is reversible; wear the quilted surface on the inside and the vest stays comfortably warm, or wear the smooth surface inside and it gets damn hot. A two-prong male adapter is sewn in the vest and connects to the heating elements that radiate warmth. An intermediate assembly, consisting of wiring, a female two-prong plug (that connects to the plug in the vest), an off-on switch and another male plug, bridges the vest and the third apparatus; this last is semi-permanently attached to the terminals of your 12-volt (or six-volt if specially requested) battery and carries in its electrical line a spring-loaded holder and fuse.

If there seem to be a lot of component parts, there aren't, really. It makes sense to have a semi-permanent attachment affixed to the battery, and the intermediate electrical connection is necessary to provide the wearer enough cord length to retain on-board mobility. Besides, the middle segment can be removed from the vest *and* the bike and stored in a pocket.

In cooler Southern California weather, a Tee-shirt, the vest and a leather riding jacket provide significantly more comfort than the tester's normal complement of Tee-shirts, Long John uppers, turtleneck sweaters, wool sweaters and outer jacket. A glance at the thermometer as one walks out the front door determines if the vest is to be worn warm-side-in or hot-side-in; once that is established, the jacket's temperature can be regulated (if necessary) by turning the current off and on with the in-line switch.

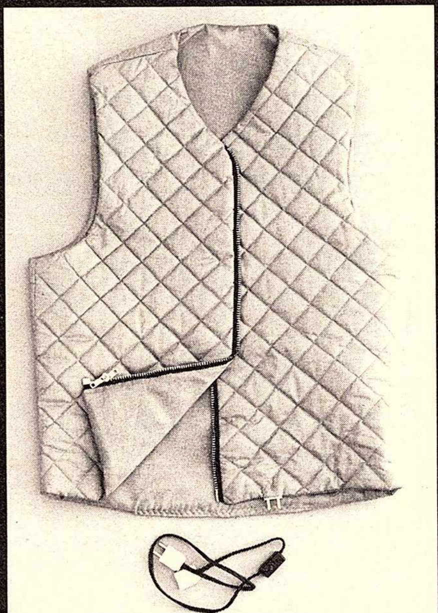
Our only important complaint with the Lectric-Vest concerns hot-spotting. If it is worn over a light shirt, the area between your shoulders can become uncomfortably warm. The normal riding position extends the arms and pulls the vest tight across the shoulder-blades and exceptionally close to the skin. A heavier shirt, worn beneath the vest, disperses the heat more effectively and diminishes hot-spot discomfort. Although we haven't tried it as yet, it is possible that a ventilated shirt—like a motocross jersey—would function better than a conventional shirt.

Because of the sizes offered, and its dual-heat-level capacity, and its lightness and easy maintenance, we recommend Widder's Lectric-Vest to anyone who is simultaneously faced with a riding compulsion and chilly weather. The vest costs $49.95, and if you don't like it you can return it within 15 days of receipt and get your money back (except for postage costs). Write to Widder Enterprises, 3539 Calle La Quinta, San Clemente, Calif. 92672, and if you order one, make sure to include chest and waist sizes. ◉

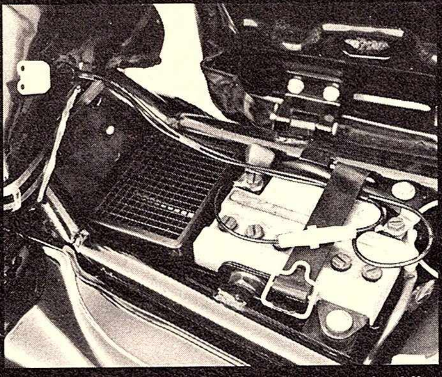
# WIDDER LECTRIC-VEST

Light, decent-fitting and two-way-adjustable for heat, it works. No kidding.

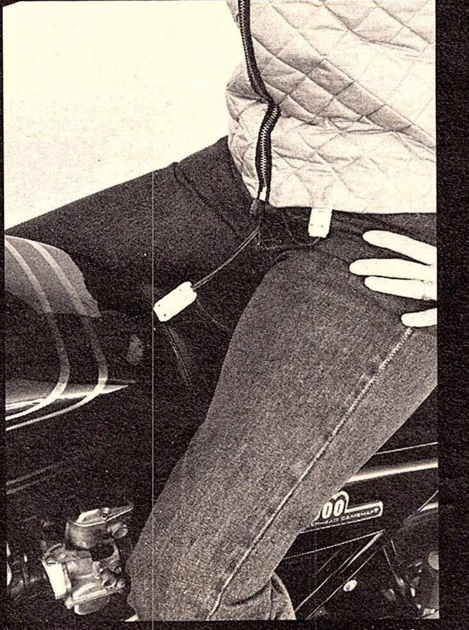
PHOTOGRAPHY: PAUL R. HALESWORTH



*These are the parts that stay with the rider: the vest and the intermediate cord. The cord has quick-disconnect fittings and an off-on switch.*



*The cord semi-permanently attached to the bike is fitted with battery-terminal-sized connectors on one end and a female quick-disconnect on the other that accepts the male fitting on the intermediate cord. An in-line fuse holder and fuse is part of the package. Vest draws about the same amperage as the headlight, which shouldn't cause any problems for modern-generation bikes.*



*With the rider in place and the vest on the rider, intermediate cord can be tucked inside vest—assuming rider doesn't have to use off-on switch.*

# *Alive with pleasure!*

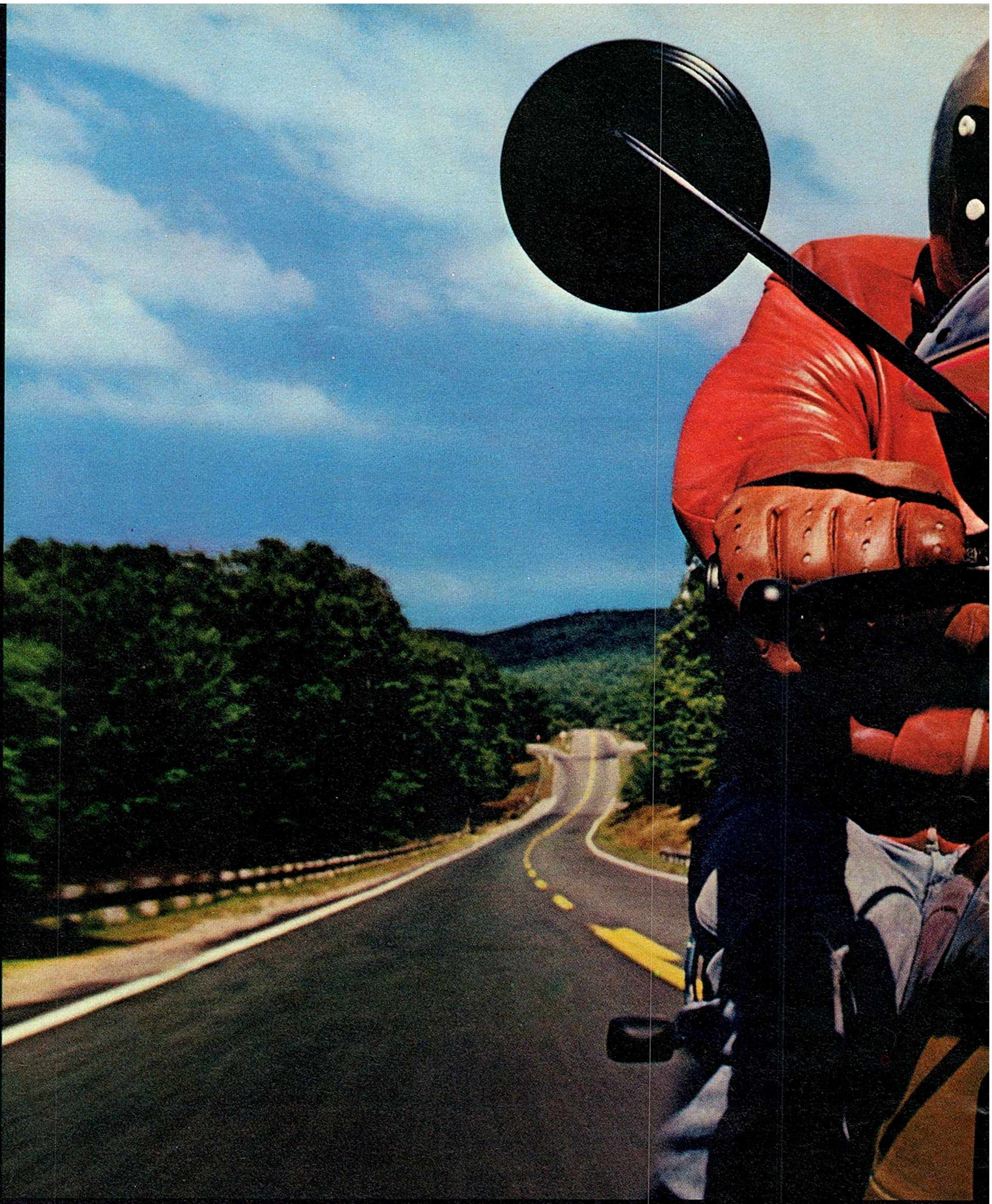
# *Newport*

***After all, if smoking isn't a pleasure, why bother?***

© Lorillard 1975

Warning: The Surgeon General Has Determined That Cigarette Smoking Is Dangerous to Your Health.

Box and Kings: 17 mg. "tar", 1.2 mg. nicotine; 100's: 21 mg. "tar", 1.5 mg. nicotine av. per cigarette, FTC Report Apr. '75.



# "If you think the BMW is only built for touring, you ought to try a little tearing."

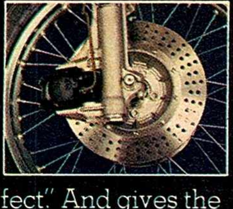
When most Americans climb on a BMW, they're surprised. Read the magazine road tests. They're full of editors saying "I never realized..."

What they never realized, of course, is that the BMW is both an exceptionally comfortable and reliable touring machine, *and* a very slick, agile machine you can really rip on.

How on earth can the BMW be both? Examine what makes a bike work. Weight. Balance. Suspension. Power. And get ready to say "I never realized..."

Weight. Of our 4 models, 3 are the lightest in their class! And the fourth only misses by a few pounds. Our R90/6 is fully 30 percent lighter than its newest big competitor. 30! Check our levers. Brake pedal. Wheels. All made of lighter alloys to make the bike more nimble.

Balance. Notice that the major mechanical parts, the heavy items, are kept low on a BMW. So it feels a lot lighter than it already is. Notice also that the BMW front fork leg is located *behind* the front axle. This helps avoid "pendulum effect." And gives the



BMW decisive, effortless tracking, and a balanced feel.

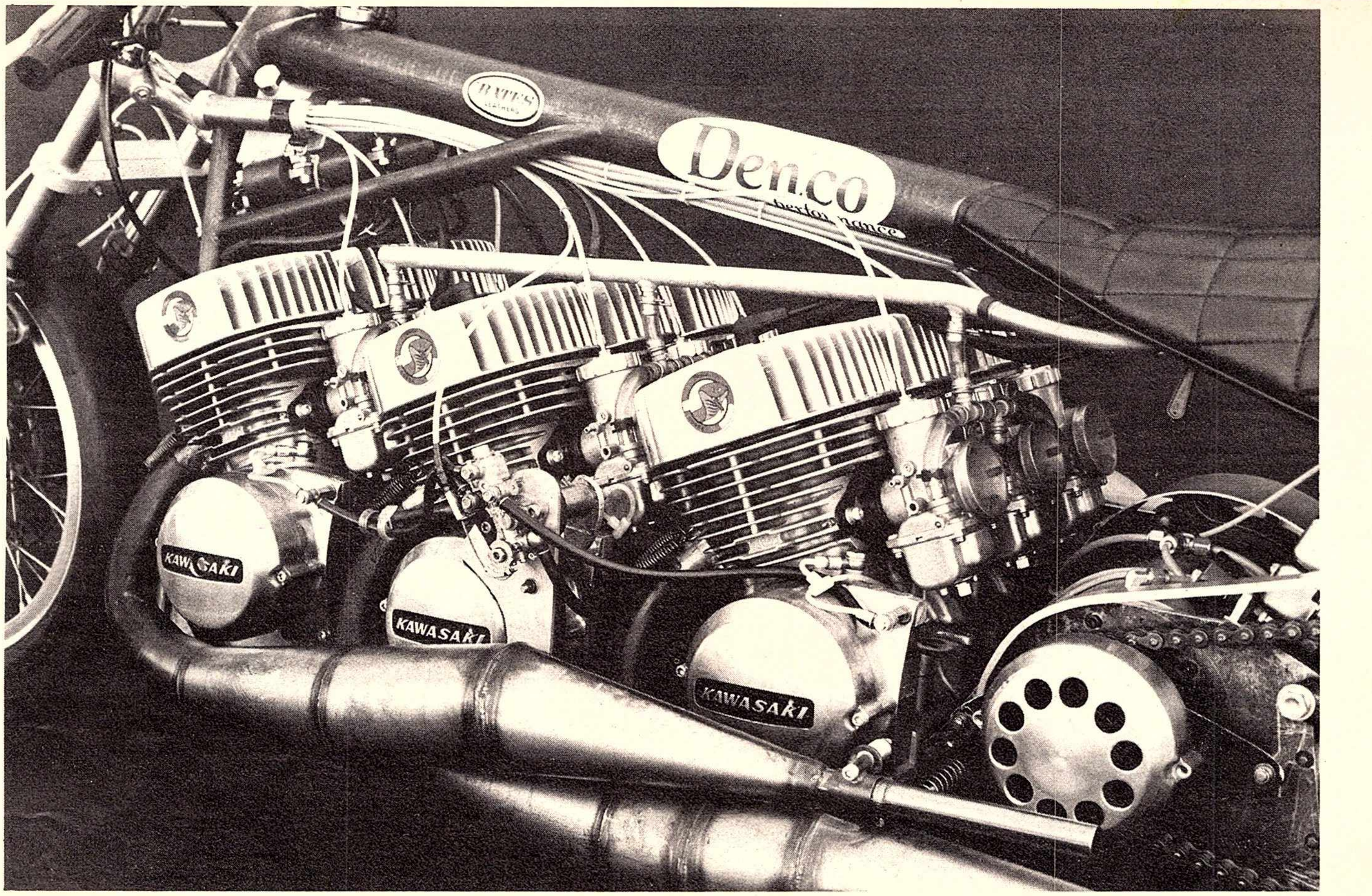
Suspension. Most riders think that because the BMW has soft, long travel suspension, it can't corner hard. "You even put harder shocks on your own racing machines," they say. True, we do. But racing is racing, and road is road. And for 99 percent of the riders, 99 percent of the time, the BMW suspension is smooth, compliant, responsive, and right. To BMW engineers, riding harsh all year is too big a price to pay for the one day you play racer.

Power. BMW has plenty. Where it counts. For practical, highway use. Few machines can stay with any BMW in a high gear roll-on. It's the kind of power you need for a quick pass. Or to get out of trouble.

The BMW. It's designed to take you thousands of comfortable, trouble-free miles. With a speed and smoothness you won't believe until you try it.

See the entire line at your local BMW dealer. You'll find him in the Yellow Pages. U.S. Importer: Butler & Smith Inc., Norwood NJ 07648/ Compton CA 90224. Canada: BMW Motorcycle Distributors, Ontario. Write for free brochure.

**Bavarian Motor Works**
Over 50 years of building the world's finest motorcycles.



# DOUBLE TIME EXPRESS

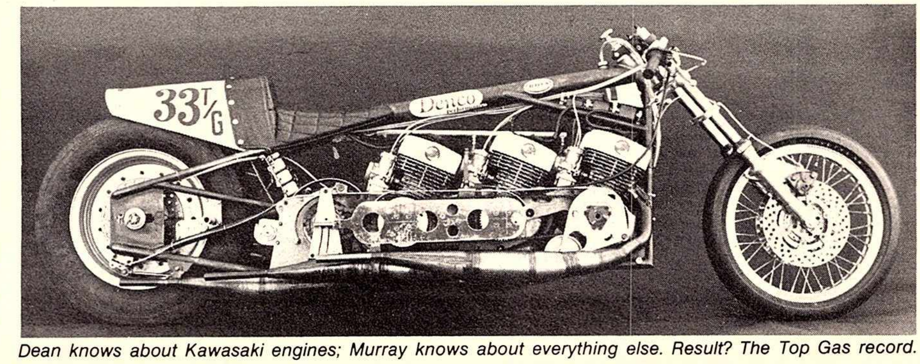
PHOTOGRAPHY: PAUL R. HALESWORTH

● The Byron Hines/Terry Vance double-engined Top Gas Honda started winning early in the summer of 1974 and didn't lose until the Fall of 1975. Along the way the bike set five AMDRA/NHRA ET records and five speed records; was the first, and continued until Fremont to be the only, gas bike to run in the eights at over 160 mph; qualified decently for several Top Fuel shows; and ran an 8.47 at Ontario during the SuperNationals. It has been during its career the definitive killer motorcycle, made so by Vance's riding, Hines' tuning and expensive technology generally reserved for the Top Fuel bikes.

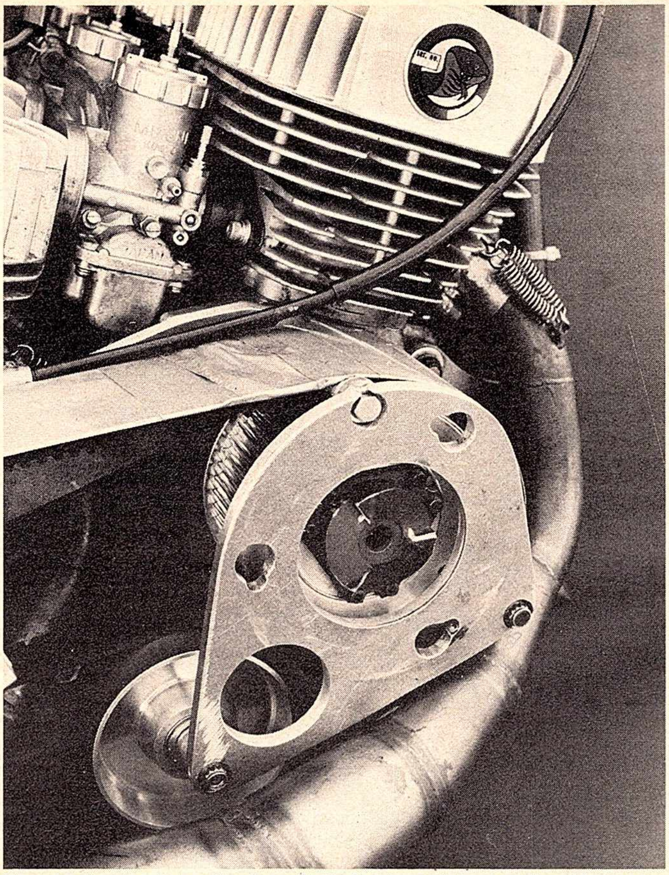
Its indisputable pre-eminence was shaken to the core by the appearance of the motorcycle you see here, sponsored by Denco Performance and constructed and ridden by one of drag racing's all-time greats, Boris Murray. The triple-engined Kawasaki's first meet was Fremont; its first full-power pass produced a terminal speed of 171 mph. The Vance-Hines Honda got snuffed by a broken magneto drive belt early in the meet, and Boris went on to win Top Gas with record numbers of 8.60—169.84 mph, causing Vance and Hines, for the first time in eighteen months, to feel a bit of a draft.

Dennis Dean, Denco Performance's owner, speaks Japanese, majored in acoustics at the Okinawa School of Technology and once owned three TV stores in Fremont. Seventeen percent of all AMDRA records are held by Denco-equipped motorcycles; thirty percent of the new records set at the Fremont meet were established by Denco motorcycles. Dean's business, founded almost entirely upon what he knows about two-strokes in general and Kawasakis in particular, thrives. He has sold more than 15,000 sets of racing exhaust systems and around 2000 competition engines (a full-race version of which costs $1685 exchange). About a year ago he decided that the time had come to build a serious, all-out, state-of-the-art, spare-no-expense maximum expression. Murray was a pivotal part of the concept. Now Denco's shop foreman, Boris was critically important because of what he knew about riding and because of what he knew about chassis manufacture and drive line technology. Boris' own double-engined Triumph double, which at different times had held both ends of the Top Fuel record, was renowned for its handling—as were a lot of single-engined Sportsters for which Murray had built frames in the early Seventies. Boris also built the frame for Danny Johnson's double-engined Sportster, so he was demonstrably capable of solving difficult problems.

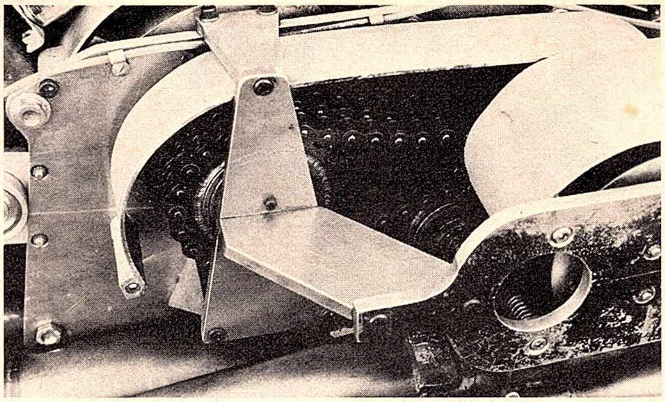
Dean had three primary objectives in mind when he decided to go ahead with the Denco Maximum Meanie: he wanted the bike to be rolling proof of Denco's expertise, he wanted to get exposure for his company and he wanted to race against the big boys. Denco mostly builds parts and engines for the Kawasaki H2 750; therefore H2 engines were almost automatically selected. But because of drag racing's requirement for displacement and torque, three engines had to be used—which dropped Murray and Dean smack into the middle of the kinds



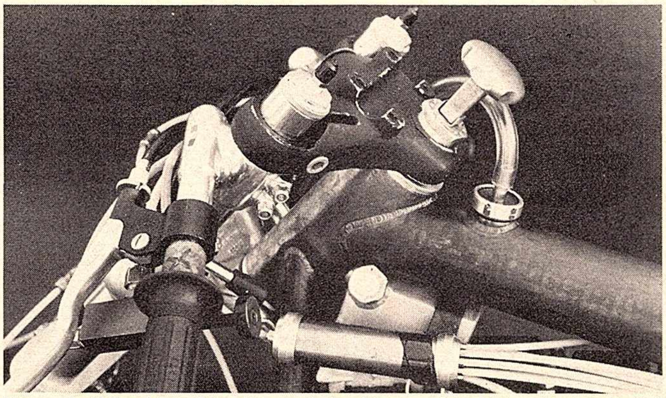
*Dean knows about Kawasaki engines; Murray knows about everything else. Result? The Top Gas record.*



Remote electric starter, like Russ Collins', drives off front engine. Motors are linked with UniRoyal HTD 8mm belts and have been trouble-free thus far.



Drive from engines to clutch is carried by a double chain run, good only for 5 or 6 passes. The chain will be discarded before the 1976 season begins.



Murray built the 1-into-9 throttle cable junction cannister; internals slide on ball bearings. Bar-mounted hydraulic valve controls two-speed transmission.

of drive line problems that were already keeping Russ Collins awake and sweating night after night. The engines themselves, despite Boris's well-grounded skepticism about their ability to produce satisfactory torque, presented no real problem. With 2mm overbores they displace 792cc each and use components that have been well-tested: Denco-Venolia forged pistons, Dennis's own porting theories, .032-in. rings, Denco-Mikuni 38mm carburetors, expansion chambers and ignition components out of the Denco kit, and stock rods and cranks. The engines' peak power comes in at 9500 rpm; their operating range lies between 7000 and 11,000 rpm.

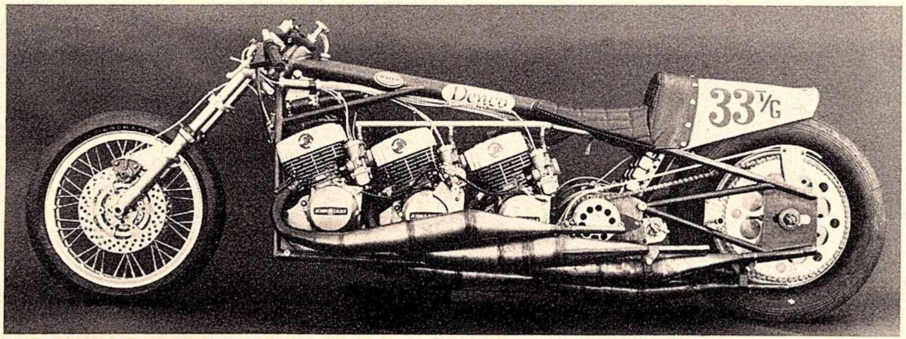
Once Boris had laid out the engine/transmission package and fabricated the carrying plates, the chassis (with a 77-in. wheelbase) presented no real problem. Provisions were made during the construction of the rear frame section for a taller (28-in.) and wider (10-in.) tire, which may be necessary when the bike is finally switched to fuel. Other than its inboard Crower clutch (so located for a more conventional riding position) and air/hydraulic gear change mechanism, the Triple Triple is straightforward and as conventional as these things ever get. The clutch was lightened 3lb. 9oz. and set for a 6500 rpm "creep speed;" the B&J transmission, selected because Dean and Murray felt that it was tougher than Lenco motorcycle two-speeders, is shifted by a finger-operated valve on the left handlebar. Air/oil pressure is stored in an accumulator at 300 psi. The handlebar valve releases the pressure, which then pressurizes the transmission's clutch and achieves high gear.

As Boris describes it, the bike is easy to ride. The rear brake is operated from the left handlebar. After a tire-warming burn-out the bike is staged and loaded against the locked-on rear brake. Since the clutch is not manually operated, all Boris has to do is release the brake, turn on the gas and hit the high-gear button about half-way down the track.

At Fremont, once the clutch had been properly adjusted, everything went extraordinarily well. Not true at the Irwindale meet a week later. After making a quarter-mile smoke-run initially, Boris and Dennis lightened up the clutch until the Triple was making haze-free runs and posting 8.6 ETs. The morning before eliminations the big Kawasaki made yet another dial-in run, that one in the 8.5-sec. bracket. Qualified number one for Top Gas eliminations, the bike lost in the first round—when the breather line for the fuel tank was pinched shut by the left-right-left action of the front fork as Boris staged the bike.

But you can bet that the Murray/Denco Kawasaki won't lose many races because of quirks. There are several areas that will be improved between the '75 season and the '76 season—the drive between the engines and the clutch being high on the list. When the Triple makes its new-season debut—probably at Daytona in March—it'll be painted, polished, refined and running on fuel. When that happens, its 8.5s and 8.6s will truly seem numbers from the distant past.

—Cook Neilson



The Denco bike carries 278 lbs. on front wheel, 335 on rear. Total weight is 613 lbs; power is 360 bhp.

Dennis Dean had been reassuring Boris Murray that their multi-engined two-stroke Kawasaki "would work just fine." Murray wasn't altogether convinced—until the bike won Top Gas its first time out, and set new AMDRA/NHRA records in the process.

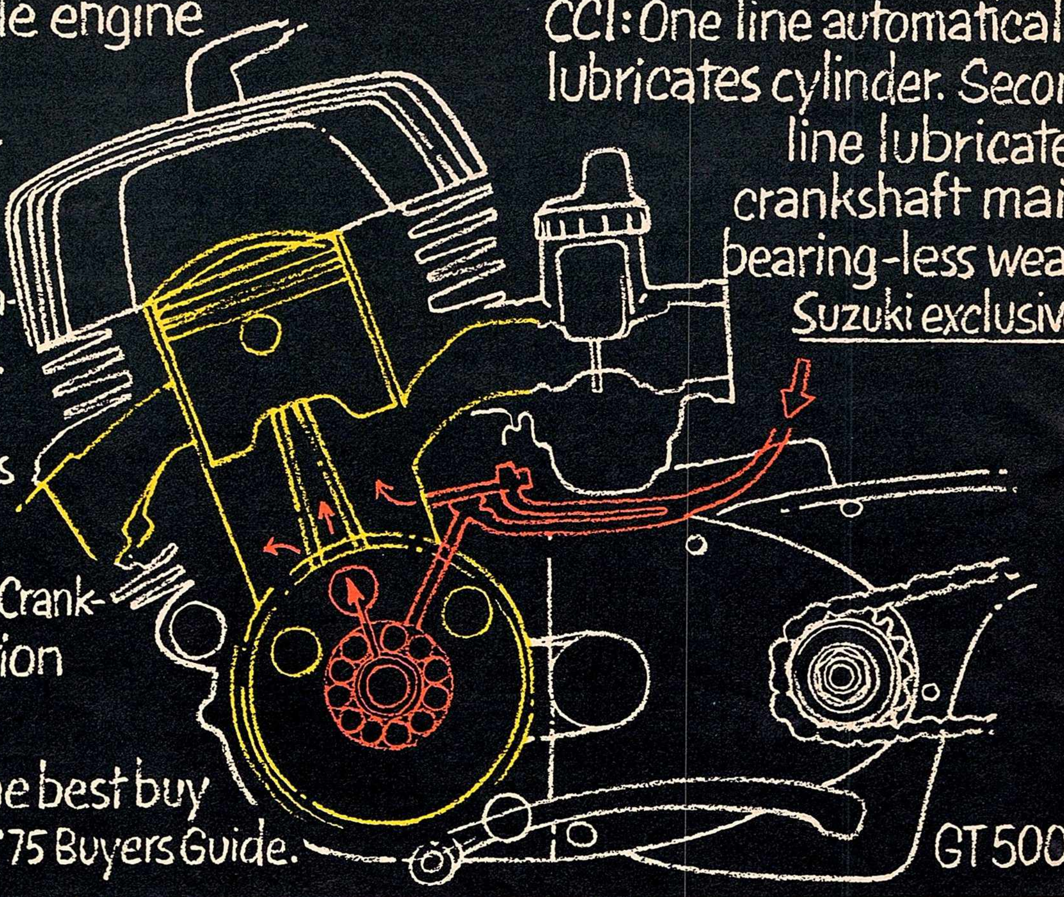
# If you spend more time with your
# get a bike designed to

**GT TWINS**: Reliable engine design–simple, effortless operation. 250 has new 4-flow scavenging system, 28mm carb, redesigned exhaust system. 185 has electric start. 500 has Pointless Electronic Ignition.

**ALL SIX GT's** have CCI, Crankcase Cylinder Injection lubrication.

**GT500** "It's simply the best buy in motorcyling." CYCLE, '75 Buyers Guide.

**CCI**: One line automatically lubricates cylinder. Second line lubricates crankshaft main bearing–less wear. **Suzuki exclusive.**



GT185: Electric start, Ram Air, front disc brake, 5 speeds.

GT250: Primary kick, 28mm carb, front disc brake, 6 speeds.

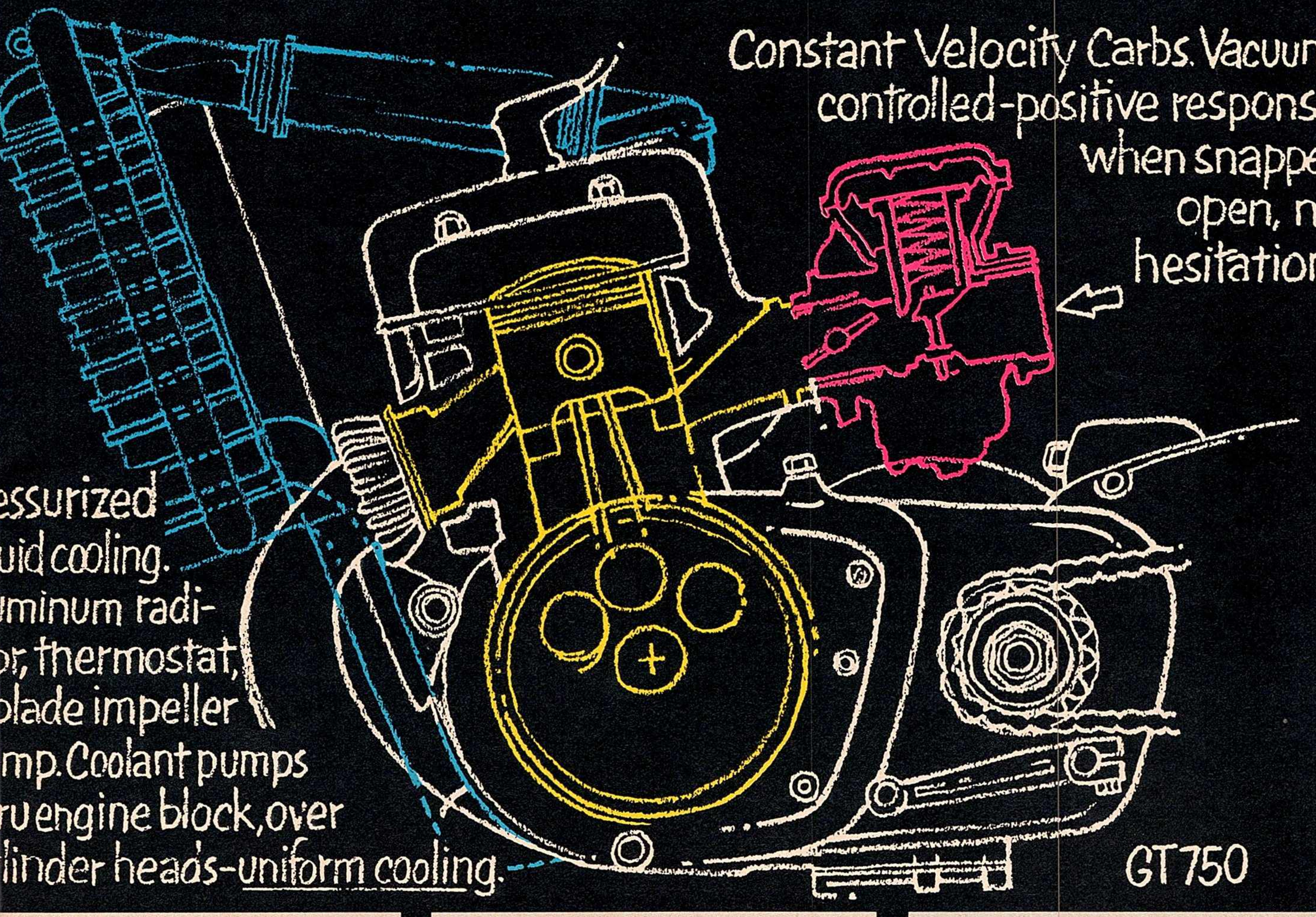
GT500: PEI, front disc brake, 4.5 gal. gas tank, 5 speeds.

# mechanic than your girlfriend, be more trouble free.

GT TRIPLES: Less engine heat–fewer engine problems. 380 & 550 have Ram Air Cooling. 750 uses race-proven liquid cooling. Result: less heat distortion, less noise, added HP.

GT 750 "Under the silent, water-cooled exterior is a semi-radical screamer." BIG BIKE, Oct., '75

RAM AIR: Aluminum shroud forces air over cylinders. Closer piston-to-cylinder wall tolerances, more compression.



Constant Velocity Carbs. Vacuum-controlled-positive response when snapped open, no hesitation.

Pressurized liquid cooling. Aluminum radiator, thermostat, 6-blade impeller pump. Coolant pumps thru engine block, over cylinder heads–uniform cooling.

GT380: Primary kick, digital gear indicator. Ram Air, front disc brake, 5 speeds.

GT550: Electric start, digital gear indicator, Ram Air, front disc brake, 5 speeds.

GT750: Liquid cooling, electric start, digital gear indicator, dual front dics, 5 speeds.

FORGET YOUR TROUBLES. GET ON SUZUKI.

CIRCLE NO. 25 ON READER SERVICE PAGE.

Keith
Moreno Valley
250
YAMAHA
3
FORD
FORD
121 MXC

# FORD PICKUPS.. HAUL IT YOUR WAY..

Pickups today are for much more than just work. They're for recreation. And they may be doing duty as a primary means of transportation. Check a motocross or drive-in sometime.

Ford was building rugged trucks more than 30 years before the sanitary '54 (shown lower left). We still build them tough, but one thing has changed. Choice—more models to suit more needs and fancies than ever.

Little pickups? Ford Courier (below) with a surprisingly strong 1800-cc standard engine. Pickups that look and ride like a car? Ranchero (shown far left) with standards that include power brakes and steering.

Or is it pickups with biceps? How about one of the world's most popular trucks, the F-100 (shown below in the new Flareside version). For more push-pull, the F-150 (far left) which works economically on any kind of gas.

Stock or tricked. Work or play. '76 Ford Pickups let you haul it your way.

These vehicles are shown with custom features added by their owners.

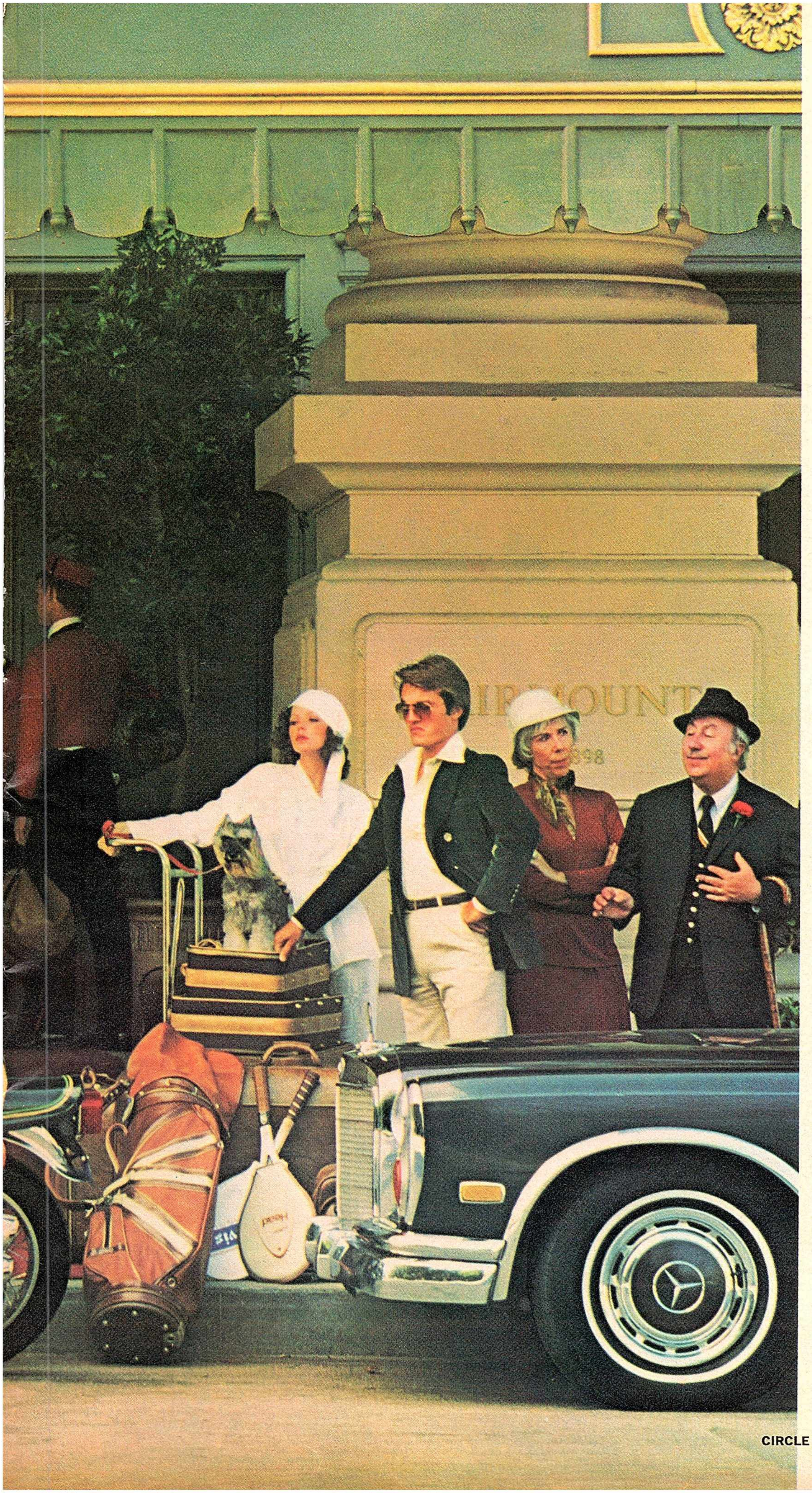
The closer you look, the better we look.

FORD

FORD DIVISION Ford

CIRCLE NO. 33 ON READER SERVICE PAGE

RMOUNT
EST. 1898
KAWASAKI
KZ900



WHAT A TRIP. I've been bellhoppin' part-time about a year now, and I never saw a guest roll up on a motorcycle before. It blew me out because he was ridin' what I've been wantin' to buy—a new KZ900. And, man, that bike really looked classy, like it belonged right out in front.

Anyway, I got to the curb about ten steps ahead of the other guys and said, "Welcome, let me take your things and how do ya like your bike?"

"Unreal," he said. And all the way up to his room I asked him everything I could think of. Is the KZ900 the same as a Z-1? (Yes and better.) What's it got new on it? (Some nifty touches, like audible turn signals, safety flashers, cushier seat.) What's the engine like? (You can't do better than the Z's 903cc DOHC Four.) Where's he been? (Touring half way across the country.)

What was the best time he's had so far? (*On* the bike, having no place to go and lots of time to get there; *off* the bike, in Santa Cruz with a very together lady named Linda.)

And after we talked about performance—I mean the bike's—I figured I'd better split. And goin' down the elevator, I decided when I buy a KZ900, somebody's gonna carry my things into a place like this, and he's gettin' two bucks like I did. I mean, that's class.

**Kawasaki**
**lets the good times roll.**

Good times include riding safely. We recommend wearing a helmet and eye protection, keeping lights on and checking local laws before you ride.

**CIRCLE NO. 26 ON READER SERVICE PAGE.**

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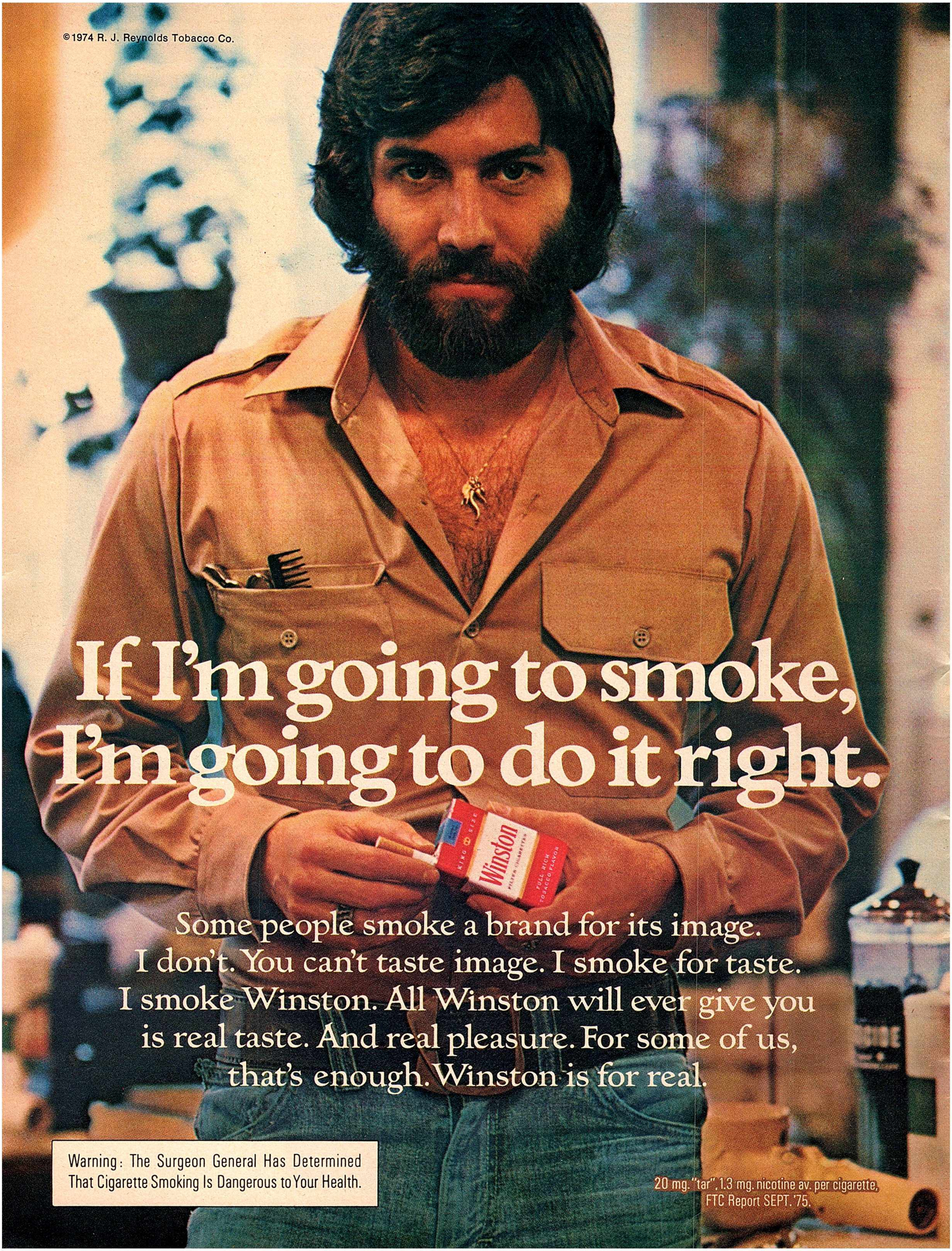


# If I'm going to smoke, I'm going to do it right.

Some people smoke a brand for its image.
I don't. You can't taste image. I smoke for taste.
I smoke Winston. All Winston will ever give you
is real taste. And real pleasure. For some of us,
that's enough. Winston is for real.

Warning: The Surgeon General Has Determined
That Cigarette Smoking Is Dangerous to Your Health.

20 mg. "tar", 1.3 mg. nicotine av. per cigarette,
FTC Report SEPT. '75.

# HONDA CB500 LINKAGE FIX

An unexpected solution to some shifting problems and a look at one of the computer's kits.

By Jess Thomas

● Early CB500 Honda Fours (before engine number CB500E-1018728) often displayed the related symptoms of sticky clutch action and difficult neutral selection. When a rider on one of these early bikes came to a stop in low gear, the machine would tend to keep creeping forward even with the clutch lever pulled tightly against the handlegrip. And when an attempt was made to select neutral, the lever would clunk back and forth between first and second gear without stopping at the desired neutral click.

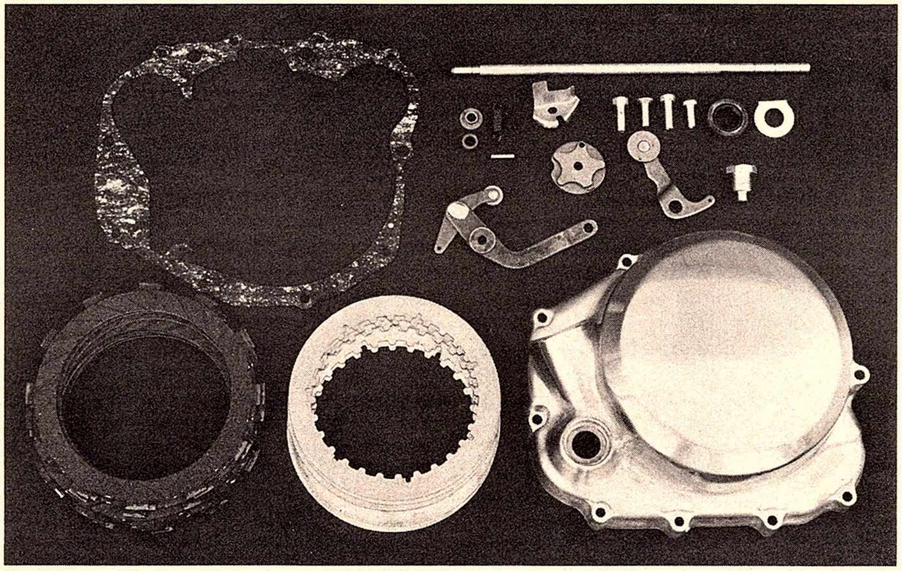
Our Art Director's *Gentleman's Express* CB500 Special (see *Cycle,* Nov. '75) had a sluggish gearshift action after it was assembled. Since we weren't familiar with the various stages of the CB500's shift mechanism evolution and hadn't yet learned the change-over serial number, one of the fix kits was ordered.

After our bike was disassembled according to American Honda's Service Bulletin # 500-4, it was found that it already had the new-style selector detent parts, clutch plates, and outer case. The follower rollers on the kit's detent levers (called shift drum stoppers in the Honda Service Bulletin) were smoother and slightly wider than those in the bike, so we put in the new ones. No evidence of binding or sticking could be found in any of the selector mechanism components. And the only part that didn't belong was an extra clutch plate. There are supposed to be seven friction plates and six steel plates in the clutch hub, with a friction plate being the first and last plates assembled in the sandwich. Our bike had an extra steel plate between the outer body and the first friction plate.

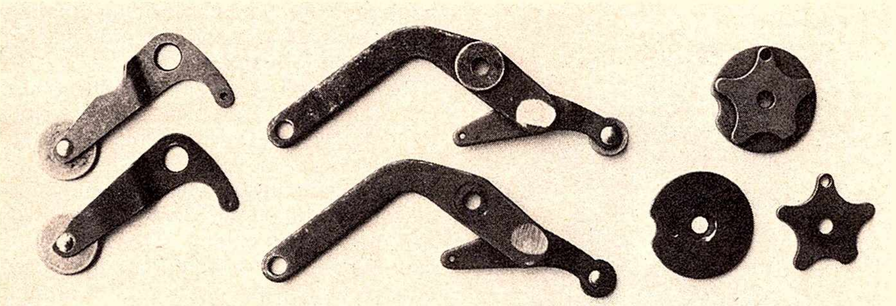
The Gentleman's Express was assembled in the proper sequence and Art Director Halesworth pronounced the bike to shift perfectly, even under full power.

A bike with a modified engine or one that is drag-raced will require stiffer than standard clutch springs. These springs are available from Racecrafters International or Action Fours. ◉

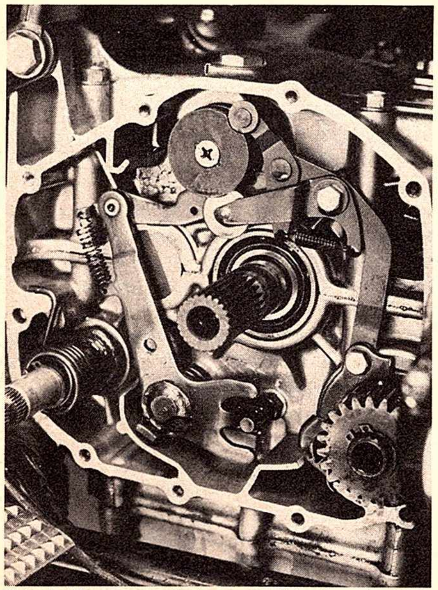
PHOTOGRAPHY: PAUL R. HALESWORTH



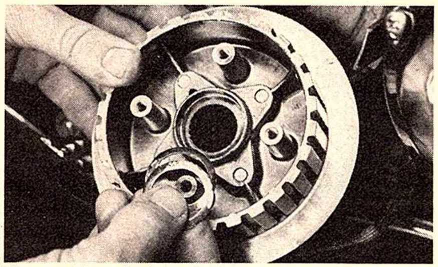
*Honda's modification kit (part no. 06241-323-000) costs about $40.00 and updates older CB500s.*



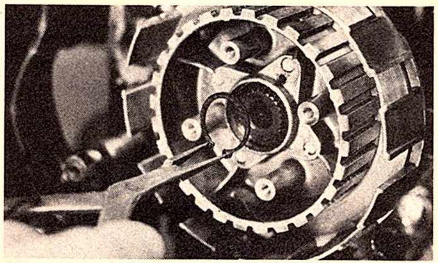
*Later parts in our kit had wider, smoother rollers, reinforced pivot eyes, and a one-piece detent cam.*



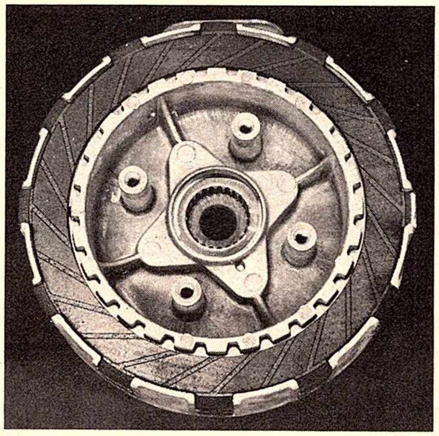
*This is the way selector and detent parts fit in later and modified CB500s. Clutch goes in next.*



*These shims limit mainshaft end play to .004-in. Shims come in .004, .012, and .020-in. thickness.*

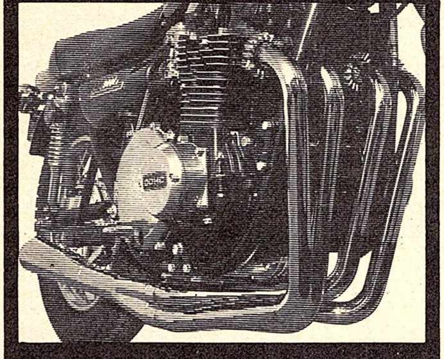


*After hubs and shims are in place, the snap ring is installed with its sharp side outward.*



*Clutch rotates counter-clockwise: all friction plates are assembled as shown to sling out oil.*

HOOKER



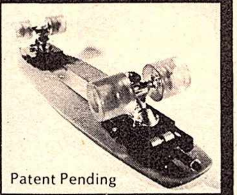
Horses $16 each

It's Hooker's 4 into 1 system, part #27151 for 1973-76 Kawasaki Z1. *Dyno-tested it delivered 83 horsepower at 8,500 rpm. (Stock read 73 horsepower.) That's 10 extra horses at roughly $16 each.

*Hooker systems make horsepower.*

Hooker has over 200 exhaust systems for the latest super bikes. Ask at better dealers, now. Or write Hooker at 1032 West Brooks Street, Ontario, California 91762.

*Testing was conducted on a Stuska dynamometer, November 7, 1972, at Hooker's California facility by Product Development Engineer, Dick Lytell.



A suspension system on a skateboard? That's right. It's Hooker's revolutionary contribution to high performance skateboarding. A simple adjustment of Hooker's suspension system can dial in just the right performance attitude: releasing the energy of a flex board for the wildest hotdogging or assuring the stability and security of a rigid board for high speed runs. Available in 24" and 27" lengths, the suspension system can be easily installed on your flexible board. Or, for the ultimate performer; order the fiberglass Hooker Tune Flex board complete with suspension system, sure grip deck, double action trucks and urethane wheels. It's cheaper to buy the best the first time. And you can order direct, sight unseen and know you'll get the best just because it's from Hooker.

Yes, I want the best. Send me a Hooker.
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$19.95 Suspension System ____24" ____27"
Undecided? Send $1.25 for information on all Hooker products. My weight is________
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Enclose check or money order payable to Hooker, 1032 West Brooks St., Ontario, Calif. 91762. Freight included. California residents add 6% tax. Offer void where prohibited. Sorry, no C.O.D.

**THESE THREE** . . *Continued from page 37*

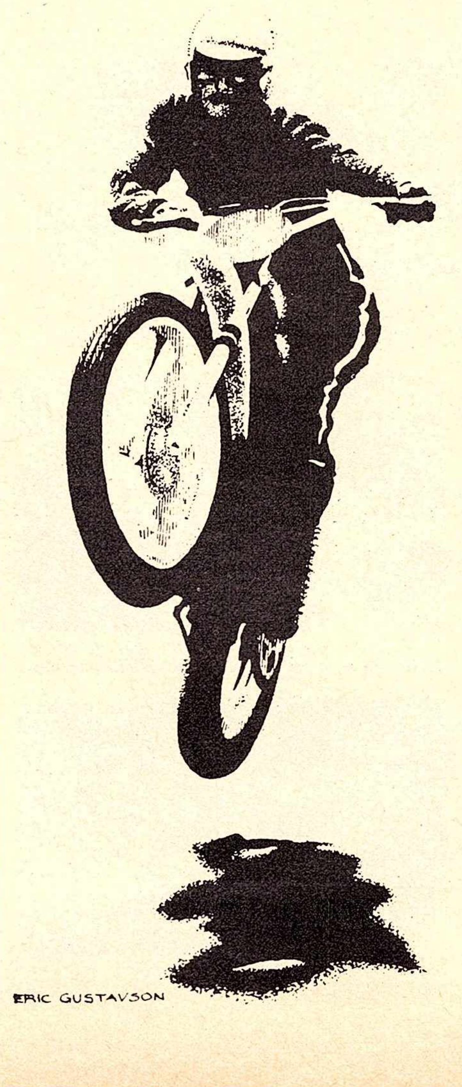
from the right-side, and move the clutch 1⅝-in. closer to the Norton's center-line.

The head fairing is there not necessarily to enhance penetration but to make the bike easier to ride. Because of the injection linkage Christenson can't wrap his legs around the bike like other riders do; without the fairing he could use only his arms to contend with wind-blast.

Gregory and Christenson, recognising that their current dragster is at the end of the line, have already begun building their 1976 race bike. It will be powered by three Norton engines, and times of 7.50—185 mph are anticipated. The triple, astonishingly, will be two inches *shorter* than the double.

Three engines or no, you can rest assured that the bike will fulfill Christenson's and Gregory's primary requisites: it will be as light as they can get it, it will be simple, it will be reliable—and it will win.

If you can get it in your mind that Joe Smith's double Harley-Davidson is a Sherman tank and the Norton a Sidewinder missile, then Russ Collins' triple-engined "Atchison, Topeka and Santa Fe" is a Rose Bowl Parade float. Think of the double 74 as an operatic *basso,* the Norton as Rita Coolidge and the Honda triple as the Mormon Tabernacle Choir. It glitters. It shines. Hundreds of feet of braided steel hose entwine its length like Christmas tree decorations; multi-colored mechanical mysteries gleam forth from every available space and cranny. "If you sat down and sketched out a bike like Russ's," says John Gregory, "you'd figure that it simply couldn't be built."



It weighs 850 pounds—400 more than the Norton and 320 more than Smith's Monster-Glide. It has its own remote electric starter. It uses belts to carry the primary drive instead of chains. Its clutch cannot be engaged or disengaged manually. It has fittings on the intake horns for nitrous oxide injection. It uses two gallons of fuel mixture per run, and carries on-board two gallons of 70-Wt. Valvoline oil. It costs Russ Collins between $250 and $300 to make a single quarter-mile run. It has to be unloaded from its truck with an electric winch and sling.

It is in every conceivable way almost beyond imagining, and it has, in one season of running, done wondrous things for drag racing in general, and for the Top Fuel category in particular. At Ontario it became the first motorcycle in history to run a seven, with an off-the-trailer rip of 7.96—176.81. It then dropped that time to a 7.861—178.92, and ran a back-up 7.91—178 in the first round of eliminations to establish the 7.861 as a new ET record.

The bike then, characteristically, broke. It has broken frequently this season, which perversely gives it some of its charm. It breaks because it's heavy, because it makes staggering amounts of power and because it is on the forward edge of motorcycle drag racing technology, which alone is enough to guarantee sketchy performances.

There is no question that the triple Honda makes more power than the Norton or the Harley-Davidson; neither Gregory nor Smith dispute that. Nor is there any question about which of the three bikes moves the first 50 yards the quickest: the Honda, clearly. With its off-the-line charge and its top speed, the triple-engine should win every race it enters; what bike could run it down from behind?

All those things that give the bike its quickness and its speed also conspire against its reliability. It would be heavy to begin with—three Honda engines weigh a lot. But the automotive Crower clutch and the drive pulleys and the belts all pile more weight on the bike's left side, which must be balanced by 35 pounds of lead (in floorboard form) bolted to the right. A late addition (after Indianapolis and before Ontario) of outboard pulley support bearings for engines #2 and #3, housed in a steel girdle, added more weight still.

The bike's horsepower—close to 500—is an irresistible force. It works against an almost immovable object—850 pounds, secured to the track by a super-sticky M&H 8-in. rear tire. Something, as they say, has gotta give. All season, what's been giving has been the drive train. Chains were determined to be hopeless at the outset, and Russ switched to the kind of belts used to drive heavy industrial equipment, Chrysler superchargers and automobile camshafts. The belts at least show promise—but they keep breaking, the last time at Ontario on a pass that saw Russ comfortably in front of Joe Smith until the belt coupling the front engine to the middle engine let go (Joe's 182.55 mph run won that round).

Complicating matters is the fact that Russ is learning week by week to extract more power from his 3288cc engine package. He constructed an injection flow bench and experimented on Ron Teson's single-engine Honda fueler (8.91—153mph), and found quickly that the triple had too much compression (the ratio was dropped from 11:1 to 10½:1) and not enough mixture. Running the standard 90% nitro dose through slightly larger nozzles cured the bike's detonation problems and cut back its ring and ring land breakage, and since then the powerplants have given no problems at all. Neither has the Crower clutch, or the Lenco two-speed transmission.

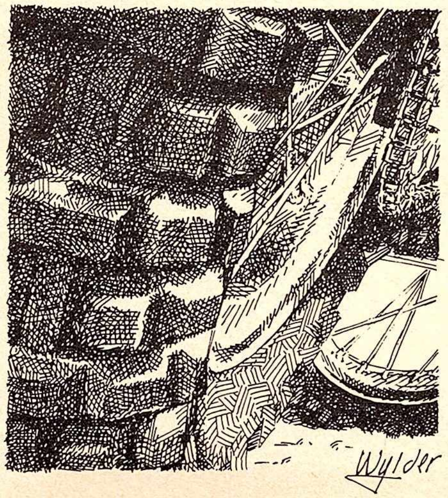
More than a motorcycle with which to win drag races, the R.C. Engineering Triple is a show-case and a business card. All of Russ's deep-motor after-market hop-up components are used: studs, cams, cranks, magnetos, bearings, springs, collars, keepers, pistons and rods. Just as it is important for any businessman to display his wares, Collins spent most of 1975 on the road, racing. From May to October he was a full-time touring racer, and it cost him between $6000 and $8000 per month to fulfill his scheduled appearance contracts. During those months he made about 20 appearances, and was paid between $1000 and $1250 for each. Naturally he can't do it alone; Slim Moffitt is the engine-builder, Byron Hines (who teams with Terry Vance to run the omnipotent Vance/Hines gasser, which didn't lose until Fremont) does the tuning and Dave Brewer handles coordination and logistics. It is in every way a professional, showy effort, made the more arresting by the wide range of possibilities that crop up once the bike sets its front tire on the starting line.

*Anything* can happen with the Triple. It can break. T.C. or Smith or Marion Owens can beat it. It can leave hard, look good and then demolish its rear tire with wheelspin. As devastating as its technical credentials may be, it is quirky, difficult and sometimes sullen. The people in the stands who root for it know that a win is an iffy proposition, and root all the harder; those who root against it know the same thing and are rewarded with frustrating regularity.

Joe Smith and the Gregory/Christenson team view their machines with professional detachment; both bikes will likely be for sale at the end of the '75 season. But Russ is passionately involved with his Honda. "Two of the best things that have ever happened to me in my whole life," he says, "were because of the bike. It won the NHRA's Best Engineered Vehicle award at the Englishtown Nationals in New Jersey in 1974, and at the Supers, it was the first bike in history to make a run in the sevens."

But he doesn't know exactly what to do with it in 1976. It is frighteningly expensive to campaign, and Russ realizes that—face it—the bike hasn't won that many meets. He can either add nitrous oxide injection for even more power and slug it out with drive line breakage problems for another season, or build a double-engined, supercharged Honda for racing and use the Triple for exhibitions. But sell it? He'd never sell it. He has his guts in the Biggest Honda, 4000 hours of his time, close to $30,000 of his money and every stitch of his technical ingenuity. It has become a part of him.

There is an argument abroad that the giants like Russ, Joe and T.C. have hurt Top Fuel racing by obliterating the expectations of racers less committed than themselves. Smith drag races motorcycles for a living, Christenson and Gregory "made a little" during the '75 season and Russ's racing is an adjunct to his business, R.C. Engineering. These men are professionals; Top Fuel drag racing is at the center of their livelihoods. Between them they have raised the temperature of Top Fuel to such a level that few other competitors can stand it. These three, with few exceptions (Marion Owens, Sonny Routt, Danny Johnson), have made Top Fuel theirs—and in so doing have changed their sport from "something you do" to "something you watch." Top Fuel racing was fun in the late Sixties and early Seventies. Spend a couple of thousand dollars, build yourself a Sportster or 74, run 9.0s and win your share. Fun it was then; business it is now, and the quickest way to tell who does something for fun and who doesn't is to see who does it best. For now, determining "who does it best" has turned into a three-brand, three-machine squabble, and if no other Top Fuel competitor really has a chance, then that is truly the price of progress. Smith, Christenson-Gregory and Collins have all paid the price. Wanna run against them? Fine. You spend what they have spent, you endure the crashes they have endured, you embrace and advance the technology they have pioneered and you travel the 15,000 miles per year that they travel. You become, in fact, what they already are: professionals. Then—maybe—you can beat them. Not until. ◉



SHOCKING NEWS

The Bilstein Nitrogen Pressure Gas Motorcycle Shock Absorbers, previously seen only on factory works bikes are now available to dealers! Utilizing a 36mm high capacity oil chamber and pressurized nitrogen gas, Bilstein Shocks provide constant dampening action regardless of high temperatures or severe shock loads.

These durable motorcycle shocks are standard with a Heim joint. Designed especially for cantilever and forward mounted suspension setups.

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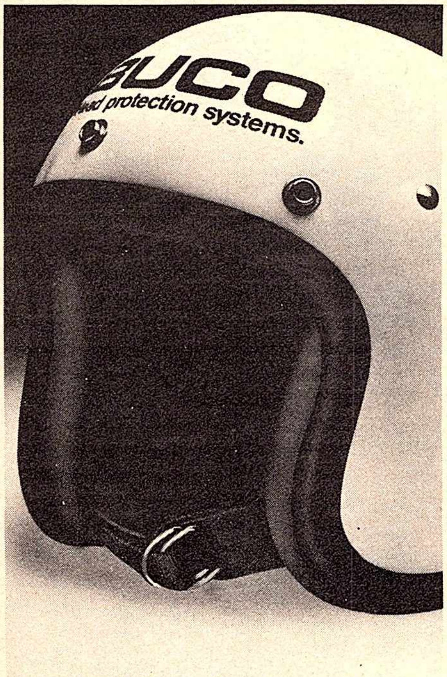

The Buco Blueline GT.
For those who put a
high price on their heads.

**BUCO**®
**Head protection systems.**
by American Safety

**SUZUKI TR750**. *Continued from page 54*

rims of the future will be made even wider because that's the way tire sizes are going. "Every time we go to a wider tire the riders like it better because the bike handles better and they can go faster. We can't use anything wider now because the chain's in the way; we'd have to move the chain line to use a wider tire."

The TR750's chassis is, in most ways, a study in contemporary orthodoxy. The rear suspension has its spring/damper units tilted forward to get more travel, as is the case with Suzuki's motocrossers: "There's six or seven inches of travel; I haven't measured it." The rear shocks and the front fork are supplied, to special order, by Kayaba, and the frame is yet another variation on the old Norton Manx theme but with the upper main tubes straightened in the modern manner to more closely follow the load path from steering head to swing arm pivot. The main frame tubes have an outside diameter of 29mm; those forming the rear subframe are 22.5mm. We didn't think it wise to saw frame tubes apart just to get wall thickness, and Ken couldn't provide that information, but frames' incidental bracketry usually is made in the same thickness as the tubes themselves and the TR750's brackets are of 2.35mm-thick material. The frame is all in steel, of chromoly specification, but the swing arm is fabricated from 35mm x 60mm rectangular aluminum tubing with a 3mm wall. The axle slips through machined aluminum blocks that are a slide fit in the swing arm ends, and positioned by two adjustment bolts on each side, with broad-based spacers and plates to make the whole assembly very rigid when the axle nut is pulled up tight.

Taken overall, the TR750's chassis is a very tidy piece of work, which is how such things should be, and the primary reason for the bike being as light as it is. Rumors about wide-spread use of titanium were true in 1974, Ken confirms, but most of the exotic-alloy fittings were duplicated in ordinary aluminum for the '75 season, and in either case the weight reduction obtained was very small. You can marvel at the beautifully machined titanium engine-mounting through-bolts, and handle the feather-light aluminum engine side-cover screws as though they were pearls, but the weight difference between those special items and stock parts in mundane steel is of less consequence than riders' appetites.

While we were having our conversation about weight, Ken was pulling the engine out of its rubber-bushed mountings, a job that begins with disconnecting wires, cables and radiator hoses, and slipping the carburetors out of their neoprene manifold spigots. And those carburetors *are* light. They're special magnesium-bodied mixers made by Mikuni (originally for the 500cc GP Four, Ken thinks), and three of them are a full pound lighter than the equivalent 38mm aluminum-bodied Mikunis. But the thing that really distinguishes them from the ordinary, off-the-shelf 38mm Mikuni is not their weight (0.33-pound lighter) nor what they do for power (nothing the earlier aluminum 38mm instrument didn't) but their price. Ken informed us that his understanding was the trick Mikunis cost U.S. Suzuki no less than $300.00 apiece; a staggering $900.00 a set.

The next ancillary component to come off the bike was the rotor and stator for the TR750's CDI ignition, and that too brought forth some surprises. First there was wonderment that the stator carried no spark-trigger coils. Ken cleared that point by telling us that the stator's six energizing windings also serve as triggers, their rectified pulses firing all of the engine's three spark plugs simultaneously at 120-degree rotational intervals. We would have supposed that arrangement might fire the charge in the cylinder being scavenged, as well as the one coming up on compression, but the engine obviously does run without anything of the kind happening. The surprise came when, while pondering the potential consequences of the simultaneous sparking, we asked Ken for an ignition timing figure . . . and he promptly said he didn't know. "The timing is built into the ignition," he said. "They don't even tell us what it is. This year they sent us three different types of ignition systems, and they'd say 'this one is more reliable' or 'it gives a slightly different timing' but I've never known what the timing was; they don't tell us anything like that."

All of us have devoted much effort to getting various engines timed just right to suit particular track conditions and fuels, and we wondered how Suzuki could get away with their mysterious, one-setting ignition. Ken couldn't explain beyond simply saying it worked, but he did add that the Team's fuel isn't the uncertain stuff you get at the nearest gas station. They use lab gas, which isn't necessarily made for a high octane number; it is compounded to very rigid specifications, with no surprises lurking in the can. And when you don't have to adjust for variations in fuel quality there's less reason to adjust spark.

With the TR750 engine free of encumbrances we lifted it out of the frame, placed it on the scales, and added the carburetors and ignition components already removed. The whole pile came to only 132 pounds, which is very light, and that set off some half-joking speculation about what might be missing inside the cases. Nothing was. It was all there, and most of it looked much like what you'd find inside a standard GT750 engine but with more gears in the transmission and bigger port windows in the cylinders.

If there was anything special about the crankcases we couldn't spot it. Ken says some of the cases have been lightened by machining away a bit of metal here and there; this set hadn't been touched. There was a special side casting, in magnesium, to leave the TR750 clutch outside in the air instead of inside with the oil, but that apparently requires no change in the cases themselves. The clutch is one of your typical multi-plate assemblies, with 17 plates and an aluminum hub. Ken says it needs little attention and causes no problems.

Numerous special gears have been fitted inside the Suzuki racer's cases, including a steel replacement for the nylon transfer gear in the water pump drive. And while the stocker has helical primary gears, with a 49-tooth cog on the crankshaft and one with 82 teeth at the clutch, those in the race bike are straight-cut and the driven clutch-hub gear does not incorporate the touring model's drive-cushion springs. Also, the number of primary gear teeth has been reshuffled, with 54 at the crank and 85 at the driven gear, which changes the ratio from the standard 1.67:1 to 1.57:1.

Of course, most of the special gears are clustered in the six-speed transmission, which has been shoe-horned into quarters intended for a five-speeder. The effects of crowding are clearly seen in the widths of individual gears and in the proportions of the engagement dogs. Everything looks too frail to survive the hundred-plus horsepower being fed through the transmission. Stresses are greatest on gear pairs that provide the largest ratios (the smaller gear will be comparatively weak) and the Suzuki six-speeder's crowded cogs get only the width needed to cope with their particular load, and nothing more. First gear has the highest ratio (2.19:1) and gets the widest teeth—14.5mm; the teeth on the pair of gears that produce the transmission's 0.962 top gear have a 10.2mm width; the rest fall between those dimensions. Gary Nixon had a transmission failure at Ontario, but that was a consequence of clutchless shifting, itself required by a clutch cable failure (an end fitting pulled off). Bailey says abuse of that sort is the only thing that will break the TR750's gearbox. A few early problems ended after the Team began slightly overfilling the gearcase (2600cc instead of 2200cc) with Castrol hypoid oil.

The TR750's crankshaft is a special part—but not very, if its appearance is worth anything as evidence. Like the stock crank it contains a lot of metal, and is basically six flywheels joined with pressfit pins. The crank runs in upgraded mainbearings, and we are told that the balance factor is different than that built into the stocker. The connecting rods look like standard parts, but the rod bearings are high-speed specials. According to official factory specifications the engine's redline is at 9500 rpm, but our various sources say 9000 is a more realistic maximum, and 8500 is advisable if one plans to finish a race of more than a few miles duration.

Putative redlines become unimportant in light of the fact that the TR750 engine makes its best power at about 8200 rpm, which isn't much above what the stock crank will accept without immediate complaint. And the really remarkable thing is that this engine can be expected to pump out 112–115 bhp without having to be spun like a turbine. This output represents a brake mean effective pressure very close to 125 psi, far above the performance of the vastly more elaborately ported Yamaha TZ750. We do know, now, that the racing TR750 engine does retain the same basic porting layout as the touring GT750, has the same combustion chamber configuration, and pistons that look as though they came out of the same mold.

The pistons and rings are not stock; they only appear to be. Comparative measuring shows the racing pistons' skirts to be 1.5mm shorter than those of stock GT750 pistons, and the alloy has a higher silicon content (for better control of expansion and added strength at high temperatures). The number and positioning of rings on the racing piston is the same as stock, as is the 1.5mm ring thickness, but the rings are made of special nodular iron—which is ductile, unlike ordinary cast iron—and the piston crown is machined clean instead of being left in the as-cast condition. Suzuki long ago adopted the practice of providing lateral location of the triple's connecting rods by means of thrust washers inside the pistons, and this is continued in the racing engine. The conventional approach is to place the thrust washers flanking the rod's crankpin end; that is mechanically more convenient, and cheaper, but less satisfactory in terms of high speed reliability. Thrust washers on the crankpin are exposed to very high surface speeds where they scrub against the rod-end and crank cheek. The scrubbing, when it becomes really vigorous, will produce enough friction to overheat both the thrust washers and the bearing assembly, causing the lubricating oil film to flash into non-lubricating vapor. Bearing failure then follows within seconds. With Suzuki's piston-located rods there is only the comparatively slow movement of rod-swing against the thrust washers, and the point at which the bearings encounter difficulties is moved much higher.

It says something about the Suzuki triple's design, and the efficacy of using special hyper-eutectic piston alloys, when you consider that in both the racing and touring versions the correct piston/cylinder clearance is less than .055mm (.0022-inch). The cylinder block's iron liners are fairly thick and well-supported by surrounding masses of aluminum. Add to that all the water-jacketing and you get an engine that seldom suffers from the piston seizures once common in high-output two-strokes. Even the racing engine, which has a cooling system effectively identical to that of the tourer (the TR750's radiator is a bit taller and narrower than the one for the GT750), seldom has seizure problems. Ken Bailey says the racer's pistons will stick if something has gone terribly wrong, like a bad choice of jetting causing severe detonation or a blown head gasket letting the water escape, but those things don't often happen. The engines have no thermostats, and the water temperature will stay around 80–90° C. On a very hot day, as was encountered at the last Ontario

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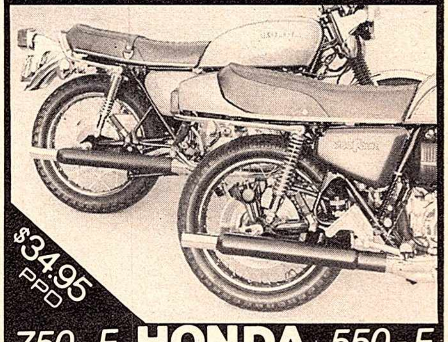

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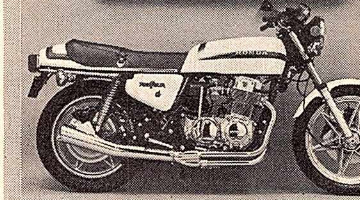

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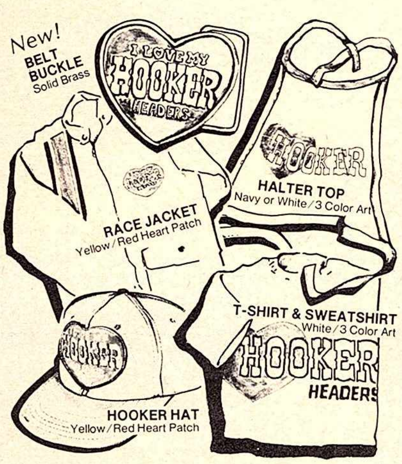

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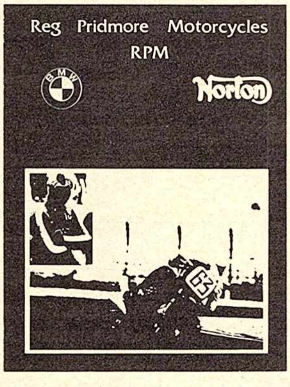

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event, the gauge may climb to 100° C. or even a little higher, but the pressure cap on the radiator keeps the water from boiling, and while there's a loss of power when the engine overheats, the pistons keep pumping.

Suzuki's choice of combustion chamber configurations makes a lot of sense in terms of their touring triple; they use a milled but otherwise unmodified cylinder-head on the racing engine and it is, in racing context, something less than a perfect choice. The combustion chambers are wide open, having no squish bands at all, and that's good for fuel economy; it doesn't provide a degree of combustion-process control compatible with high compression ratios. Ken says the Team adjusts compression ratios to suit conditions, and that they have to be careful. "We've got heads that have been milled from .5mm to 1.5mm, and three or four types of head gaskets. There are several combinations we can use, but some will blow the head gaskets very readily. When we want more acceleration we'll go to a thinner head or head gasket, if we can get the combination to live, but the higher compression does cut down the top speed a little bit."

The engine we examined had "0.5" stamped on its cylinderhead, meaning its combustion chambers were 0.5mm lower than stock. With the head gasket used at Ontario, a high-speed circuit, the trapped compression ratio (calculated from exhaust-closing to TDC) was only 6.76:1—almost identical to that of the first GT750, and below the new GT750's 6.9:1 ratio. That's not much compression for a racing engine, but it is probably about all the engine will tolerate. Open, non-squish combustion chambers expose the entire piston crown to the upper-cylinder conflagration, and the TR750 pistons we saw had been operating close to their thermal limit. The pistons' rings had been sealing beautifully, and there was little evidence of scuffing or scoring on their skirts, but the underside of each crown carried a layer of baked-on castor oil that had turned pitch black. That color is normal in a racing piston; it's what you see when the engine is working hard. It also is just a notch from the temperature that will make the baked oil char—and the piston crown cave in.

The castor-based oil in question is Shell's Super M, which is degummed, fortified and lots of other things . . . but not really available. Suzuki abandoned their automatic oiling pump when they installed six-speed transmissions; they pre-mix the Super M with the fuel, one part of oil to 20 parts of gasoline. There was some oil in the fuel (mixed about 35:1) when they were still using the pump, and it was the same Shell racing oil. Don't bother asking your local Shell service station operator for the stuff, because he can't get it and neither can anyone else who doesn't have contacts abroad.

Half the two-stroke horsepower battle is fought with expansion chamber exhaust systems, and for the benefit of those who may be tempted to try for a hundred-plus-bhp GT750 we have presented a dimensioned drawing of a TR750 chamber. We've tried to give you accurate measurements of the expansion chambers on the TR750, as we assume they were intended. The actual hardware is a little cobby, oval where it's supposed to be round, etc., and some error probably has crept into the picture. We think we're pretty close with the dimensions, and with the cone angles: two degrees for the first section of the diffuser; eight degrees for the second cone; and a shallow seven degrees into the first part of the baffle, which then steepens to 16 degrees (all these being included angles). The very short distance from the port window out to the first diffuser section, only 180mm, would give an extremely narrow power band if the exhaust pulses were puffing into a more divergent cone; the two-degree section probably behaves almost like a straight pipe, giving enough length between the engine and the main part of the expansion chamber to broaden the power spread. A final point worth mentioning is that although we have drawn the TR750 expansion chamber in a straightened configuration it does actually curve leaving the port. Those who want to construct similar expansion chambers should ponder the difficulty of hand-hammering a shallow cone into a curve, and think seriously about using ordinary parallel-wall tubing to bridge the 460mm distance between the port and the main diffuser.

Do-it-yourself types will have to think more than twice before they try to reproduce the TR750's transfer and exhaust port dimensions in a stock GT750 cylinder block. In the first place, the race-engine porting is too radical for anything but racing. Second, there isn't really enough metal above the ports in the stock block to let you carve to racing dimensions without running the risk of breaking through into the water jacket. The top of the exhaust port window, for example, is fully 6mm higher than the same opening in a new-type stock GT750 block, and 8.5mm higher than in the early one. Both old- and new-type blocks have their transfer port roofs 53mm down from the cylinder's top edge; the racing block has its transfers down 49mm.

People who have something more than a nodding acquaintance with the AMA's rules will wonder, knowing the above, if maybe the fact that the TR750 we examined had a non-standard cylinderblock casting didn't move it just a fudge-factor of distance to the wrong side of racing legality. We certainly wondered, enough to investigate the matter, but quickly found ourselves mired in a syntactic bog—the AMA rule book. Suzuki concedes that the TR750 cylinder block is a special casting, while taking the position that such castings are permitted by the AMA's rules—which forbid non-approved crankcase, cylinderhead and gear case castings but make no similarly specific mention of two-stroke engines' cylinders. That's odd, considering the book's straightforward prohibition of special cylinders for four-stroke engines, but that's how it reads, and the people who loaned us the TR750 for close study surely would not have done so had they thought it was an illegal motorcycle.

Our own perusal of the rule book had its usual effect—that of leaving us even more confused than ever—so we asked the A.M.A. to render an official opinion. After an entertaining display of semi-official and contradictory opinions, General Manager Ed Youngblood finally took charge and gave the Suzuki 750's special cylinder assembly his, and the AMA's, blessing—while conceding that "there might be a slight gray area with regard to the AMA rule book." Youngblood got in the Final Word by stating categorically that the specially-cast cylinder block was absolutely legal from an FIM point of view, and ended the conversation by saying, "The AMA is going to have to make it very clear before Daytona that people can change the casting." We find it difficult to imagine privateer foundries warming to the task, but there you are.

Before you back-yard experimenters abandon hope of having your own hundred-horsepower Suzuki, or start trying to pry a racing block out of the factory, you should know that the special block really isn't very special. Sure, the transfer and exhaust ports reach higher on the cylinder than their stock counterparts, but that's nothing you can't do by taking a different approach. The racing transfers have the same shape and width as those in a stock block, and there seems to be enough metal on both sides of the exhaust port to allow for plenty of lateral carving. All you need is height, and we have a suggestion about that: insert a 4mm-thick spacer under the late-series cylinderblock and cut a like amount off the top of the block to get the compression back. Then cut the bottoms of the transfer windows 4mm lower, and do the same to the exhaust port—there's plenty of solid metal below these port windows. You will then only have to trim 2mm above the stock exhaust port to get racing-block port dimensions for cylinder entry and exit. That leaves only the intake, which can be handled by lowering the port floor (and the port window's lower edge) 3mm, and trimming the rear of the stock piston's skirt 2.5mm.

Just in case anyone wants to go all the way with their Suzuki GT750 we've also provided specifications for all the racing carburetor jetting. We don't know what you'd have to do with the clutch to make it hold the power; we're sure anyone who'd tackle the rest of it would find a way. Making up a six-speed transmission obviously is out of the question for anyone but a millionaire, but we have a hunch that the stock five-speeder would be fine for a machine geared to do maybe 120 mph at the top. The power band is not too narrow, and there's such a lot of power that you'd have a really thrilling ride even if the engine dropped off the pipe every time you shifted. We've told you all about how Suzuki got the power; it's something to think about. ◉

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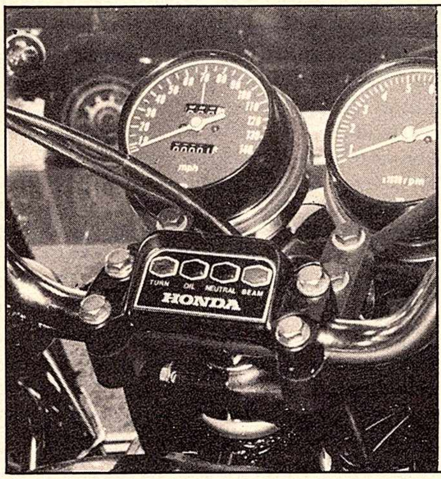

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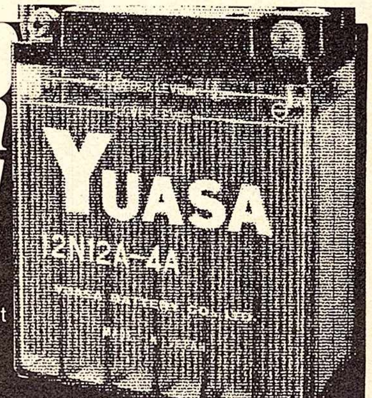

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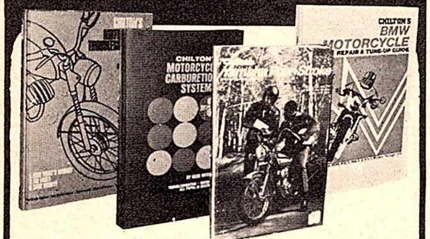

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**HONDA 125** . . . *Continued from page 68*

More than rear damping is missing on the S3. The tachometer is gone, probably a casualty of the cost-accounting department. As a sop, the rider gets gear bands painted on the speedometer face. Another victim of the product-cheapening department was the centerstand, which is sorely missed. When our test S3 had a flat rear tire, we were lucky it deflated close to home so we could change it in the *Cycle* shop. There we could jerry-rig center support and elevate the rear wheel. Out in the field, with only the sidestand for help, taking the real wheel out and putting it back in would have been an aggravating chore.

There are old and new parts to starting the 125 Honda. The key switch still resides under the left side of the tank. But the key is new—a reversible item which eliminates a lot of fumbling around under the tank: just find the slot and slip the key in. Upside-down is just as good as right-side-up. Turning the key to the on-position also lights up the headlamp. Thirteen states now require daytime headlamp operation, so Honda has extended the automatic-on feature to nearly all their street legal models. (The only exceptions are the MT-250, MT-125 and XL-100). Unlike electric starter models, the 125 single has no provision for killing the headlight when the starter (the kickstarter on the 125) operates. If the six-volt battery is weak or any ignition component is failing, the headlight will be sapping the ignition circuit, thus compounding the starting difficulties.

The engine has periods of vibration, buzzing noticeably at times but never annoyingly so. Despite its rev-range, which extends to 10,000 rpm, the engine doesn't produce that electric sizzle common to two-stroke singles, an insidious vibration which numbs the rider and gnaws off filaments in headlight bulbs.

The Honda single has an acceptable spread of power; in fact, without the speedometer bands, a rider might shift too soon, thinking that he had pushed the engine to its limit. Running the engine completely through the guidebands produces a revelation: the engine seems sufficiently willing up to 8000 rpm, but really gains strength when you let it soar to 10,000-plus. This upper-range power puts a sporting edge on a little motorcycle which, below 8000 rpm, might be written off as a docile putt-around suburbanite.

When the engine wings full-tilt through the gears, shifting points fall at convenient road-speed intervals. The third-to-fourth shift comes at 45 mph while the four-five break occurs at 55 mph. Out in traffic, this staging permits you to take a good run at 50–55 mph cars in fourth. You won't blast around with an explosive charge, Superbike-style, but then again the CB-125 S3 won't make you languish in the passing lane, leaving you eyeing the mirrors and praying.

Really steep grades can force the Honda back into third, but we resorted to cog-three only once for climbing leverage: a tough little road launched off a canyon floor and rose like a mortar shell through a high pass. The Honda can mow down fair-sized hills in fourth, and the nastiest big road grades likewise yield to fourth. Fifth is the open highway norm.

States with 15-horsepower freeway regulations will frown on the Honda 125 for use on the Great Concrete Ways. American Honda Motor Company makes no official horsepower claim for the motorcycle although the bike makes sufficient power to keep out of trouble on 55-mph motorways. If you were ever stopped on a California freeway, you would have no way to prove that the motorcycle had 15 horsepower. But it's more likely you'll get a speeding ticket on the Honda single because the bike is capable of moving far faster than 55 mph and doesn't mind doing so.

On level stretches with the rider clinched in a wind-cheating crouch, and with the engine fairly singing in fifth, 75-mph will come up on the speedometer face. The S3 has enough top-end performance so that Honda felt obliged to engineer more rake and trail into the S3 for greater stability at speed. The S2 had rake of 26.7 degrees and 3.3 inches of trail. The S3 steers slower with 27.2-degree rake and 3.8 inches of trail.

Stopping gear is unchanged from earlier models. The S3's mechanical disc brake anchors the front while a small drum slows the back wheel. Although the disc brake requires more hand pressure than some riders like, there's no shortage of power for those with a firm grip.

The least attractive part of the Honda is its suspension. The bike, thanks to the spatial relationships between seat, bars and pegs, positions the rider well. The saddle offers a comfortable perch, and the softly-sprung suspension even reacts to small ripples in the pavement. That's all very well until you discover that the shock absorbers have no damping (and no way to pre-load the springs). Running across a series of bumps at 45 mph in a straight line could—and did—cause the bike to rock fore to aft and back again on its suspension. Without damping, the pogo-rock would continue until the energy stored in the springs finally dissipated. In corners, the suspension proved so flaccid that bump-induced surging can cause the front end to get very light.

On smooth pavement, the Honda behaved well and tracked accurately through corners. So long as you exercise common sense, ride the bike precisely, cut your lines deftly, and avoid bumps religiously—the Honda won't bite you. But those who fancy themselves as real corner-jockies should immediately invest in good shocks.

Despite the fact that Honda's accounting-gnomes snatched off the centerstand and tachometer, and despite the fact that the product-cheapening forces prevailed in matters of suspension, the Honda CB-125 S3 is a better piece than its predecessors. Honda has done the hardest part in creating a small sports bike—they've pulled more reliable horsepower out of the 125 engine. ◉

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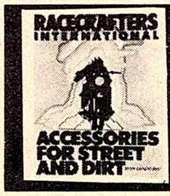

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**CARL CRANKE** *Continued from page 59*

reaching for a colossal hammer, which he used to fetch the upper triple crown a mighty clanger.

"That got it," said Carl casually, and the tube had moved the sixteenth of an inch necessary to slip it out by hand. His use of the hammer lacked the finesse I expected from his reputation as a mechanic. When I mentioned this to him later he laughed and said, "I've run into that problem before and wasted a lot of time with penetrating oil and torches, but always ended up smacking them out anyway. You see, I knew who had tightened those stanchions in the first place so I knew how stuck they were. I tightened them on the Isle of Man." By contrast, in the delicate job of changing the carburetor needle position Carl displayed the dainty side of his mechanical skills by maintaining hospital sterility in the work area and deftly removing tiny clips and cable guides. Most people consider the job as challenging as a Chinese puzzle, but Carl never wasted a movement in all the tricky operations—like compressing the spring and aligning the slide. He can even answer questions while he works.

Cycle: Was there criticism of the Trial because they used so much pavement and allowed traffic to become a problem?

Cranke: Primarily due to land-closure problems, there was a lot of pavement and it was extremely dangerous because everyone except the Englishmen were mentally geared for driving on the other side of the road. Most of us drove around in cars before the Trial to get used to driving on the left side of the road, but we never fully adapted. When you got in a little circumstance where you had to do something quick, you would go back to your natural reaction. A lot of guys hit cars. Over there they kind of have a general rule that whoever is the biggest has the right of way. And it is a pretty accepted rule.

Cycle: Like the truck that ran over Jeff Gerber's bike after he laid it down to miss a car stopped in front of him?

Cranke: That was a brand new 75 Penton. The Britishers said a lorry hit it; it was a huge cement truck.

Cycle: Did they block off any streets except for the road race?

Cranke: No. You were just left dueling it out with the cars.

Cycle: What percentage of the Trial was held on paved roads?

Cranke: There was a lot of pavement on the first and second day. I can't really say what percentage for the whole Trial, but a lot.

Cycle: About 50 percent?

Cranke: About 50 percent. On the third and fourth day there wasn't much road at all. The trail was real rough and the weather was real bad. On the fifth and sixth day it was a combination of road and trail. Sometimes you rode 6 or 7 miles, or maybe even 10 miles, down pavement at 55–60 mph and then suddenly you hit a trail and you were immediately over your head on speed because you had been going fast for so long. It is really hard to adjust your highway pace to trail pace and back again.

Cycle: Dirt riding requires consistent rhythm.

Cranke: Yeah, and I couldn't get any trail

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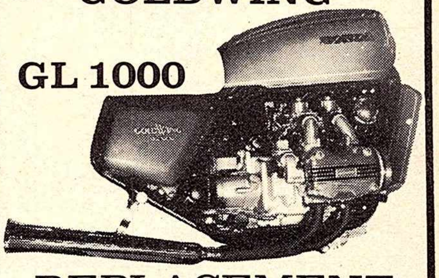

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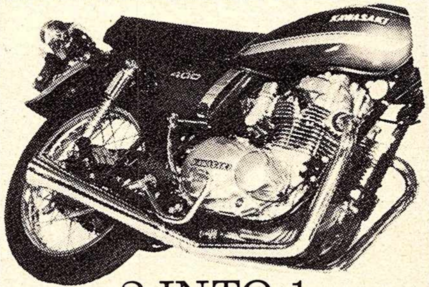

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rhythm getting off a road. Maybe it doesn't seem like adapting would be hard, but it is. I'm sure it contributed to the crash.

Cycle: That crash almost did you in. What happened exactly?

Cranke: We had just ridden a big long road section and hopped onto the beach where there was a lot of sand and some old foxholes or something. It was pretty nasty stuff and the speed average was high. Malcolm (Smith) was on the same minute as me and we would take turns leading. Malcolm was leading and I saw his rear wheel hit a hole. I don't know why, but I veered to the left where the worst part of the hole was. I couldn't quite see it in the sand. It was big and I hit it where it curved away from my tire. Instead of bouncing straight up I kicked over the bars sideways and landed right on my face. The bike flew over me.

Cycle: Didn't you have a face mask?

Cranke: No. Just goggles. It was a nice day. It blew the lenses out and messed up my face pretty good. I had a good cut under my left eye, several cuts under my chin and a big half-inch gash inside my mouth that bled a lot. My eye was nearly swollen shut and the whole side of my face was black and blue and raw meat. It broke my nose.

Cycle: What did you think?

Cranke: I thought I had broken my neck because I couldn't feel much in my shoulders and my head really hurt bad—real sharp pains. I was kind of sitting on the ground and as soon as I knew I could move my head, I began feeling better. Malcolm came back but he looked all distorted and I asked, "What do I look like?" He said, "not too good." We knew we weren't far from a check because we had ridden that section the day before in the other direction. I rode on to the check and he followed me and said I looked like I was riding OK so I went on. My mouth was bleeding so I stuck a rag in it. It bled off and on for the next three days.

Cycle: What happened to your bike?

Cranke: Bent the forks and handlebars. That's all. So the next morning I changed the handlebars and rode it with a bent fork.

Cycle: Didn't that limit travel?

Cranke: No. Only one leg was bent and that was up at the top by the triple-crown. It still had full travel but it offset the wheel so it didn't line up with the fender. So on the third and fourth day it threw mud in my face all the time. That was a bitch.

When Carl and Honda and I went riding there was no mud. Conditions were perfect. I was to ride "Old Blue," the 1974 Six Day Penton from Italy; Carl would ride "New Blue," the Isle of Man bike; Honda, who is known for occasionally suffering the consequences of berserk riding, would ride another 400 Penton called "Black and Blue." We drove 45 minutes in the van from Carl's house and parked on a logging road in the middle of a huge forest. After a short warm-up the wheelies started. Carl doesn't just pop a little one when shifting into second gear. He lifts off at 30 mph and stays elevated all the way to sixth gear if he wants, powershifting and actually going around turns if they aren't too sharp. The noise and power of it all is breathtaking. (I tried powershifting in the middle of a wheelie a couple of days later and looped a Yamaha.) Carl said you have to use the rear brake when you do wheelies. He frequently uses the rear brake with the power on—going into fire road turns and coming out of them, in mud, in rocks, on sharp buzz turns. He never wants to get caught off the pipe. He even said something about using throttle and brake simultaneously on downhills to keep the tire from locking up. Nothing I learned from Carl was more valuable than his rear wheel braking techniques.

Cycle: Why did all the Six Day riders use old tube-within-a-tube Koni GP shocks instead of the new trick gas shocks?

Cranke: Shocks are a marked part and you can't change them. If your shocks go away you might not be able to stay on time. So you have to use something rebuildable. I can rebuild a Koni in 7 minutes, which is no sweat in the 10-minute morning work period. None of the gas shocks are rebuildable—except the Marzocchis, and they take too long. The gas shocks are good and they would probably last but you can't take a chance that someone made two good ones. The Girling people were over there and they didn't even ask why we don't use their shocks. They pretty much know we have to use something rebuildable.

Cycle: Do you feel any performance loss was offset by the rebuildable factor?

Cranke: Sure. If there was any difference in performance it would be that you would have to take more abuse than with a standard shock for short periods, like in the special tests. But I contend that if you put me on a fast straight with big bumps and gave me a standard suspension motorcycle and long-travel motorcycle, I can go down that straight at the same speed with both motorcycles. The only difference is that I could go down it more times with the long travel.

Cycle: The winning West Germans used no bikes bigger than a 175. Why?

Cranke: There's an advantage to spreading yourself out in as many classes as you can, and the little classes don't have that many entries. A good rider can dominate those classes if he has a good motorcycle and by so doing he doesn't collect hardly any penalty points for his team. When you're riding against the Czechs in the big classes, you just can't beat them.

Cycle: Isn't there a disadvantage in having a little 100cc bike in tough terrain? How can they climb some of the hills?

Cranke: Zundapps are the most specialized bikes there are. If you take a 110-pound German and put him on a 100cc bike with 18 horsepower, it becomes totally different from you or me on a 100 Honda. Their little 50s have 10 horsepower and 12-speed gearboxes.

Cycle: Even so, you'd think such tiny bikes would have their necks wrung so badly that they'd die.

Cranke: Well, all the Zundapps and Simpsons and Gileras have a chrome bore, and as long as they don't get dirt in them, they won't lose half a thousandth of piston clearance in six days of competition.

Cycle: When Tom Penton's bike caught fire on the first day and he dropped out, what did that do to the team's score?

Cranke: Essentially you're finished. A missing man adds something like 15,000 points per day to the team score. That's it. When I saw the bike beside the road, and it was pretty burned-up so I couldn't tell whose it was, I had a bad feeling it was one of ours. I just couldn't pinpoint who. At the check they told me it was Tom. It was pretty disheartening to get to the very first check on the first day and know that you're out of the Trophy Team competition. It makes you—I don't know—I guess you can go in a lot of different directions. It can make you want to try hard individually, or really get to you because your team can't win. Or didn't even have a chance. That's the way it affected me. Jackie it affected differently—he is a real individual performer. That's his contribution to the team—he just goes wide open and if he makes it he does a good job.

Cycle: What happened to Tom's bike?

Cranke: I can't say. I really don't know.

Cycle: John Penton told us on the phone that Tom wrapped some fiberglass insulation around the outside of his pipe to help keep the noise down and it insulated the pipe so well that it got hot as a blast furnace and ignited the foam in the airbox.

Cranke: Something like that is what happened. Tom was the only one who wrapped his pipe.

Carl sometimes makes mistakes too. Ten minutes and 100 wheelies into our trail ride, Carl stopped. "I just got to thinking and I don't think this thing has any gearbox oil." He laid the Penton on its side and pulled the gearbox inspection plug. Bone dry. "We drained the oil for shipping and I forgot to replace it," said Carl with no particular embarrassment or concern. "How could the gearbox run without oil?" I asked, amazed that it hadn't locked up.

"All the shafts and gears run on needles," said Carl, "nothing got hurt. I was wondering why the clutch worked so well!" He dumped in a pint of Hi Point oil we had brought to mix with gas and added a few more ounces borrowed from Honda's bike. Then he buried the empty oil can and off we went.

Carl quickly disappeared on a fast road cut along the side of a mountain. The entire mountain acted as a huge berm to our right and as I was cruising along enjoying the scenery when I thought I saw tire tracks 20 feet up on the side of the road cut. I figured it was an erosion pattern or something. But down the road a little further was another track which looked like the St. Louis arch. It went from the road straight up a near vertical cut and looped back down onto the road. To make such a track a motorcycle would have to be perpendicular to the mountainside, just like an old velodrome bike. I sped up and saw the source of the tracks: Carl was "playing" on the side of the mountain. His trail discipline must be so strict in competitive events that he fills his playriding with "fun stuff" such as wheelies and St. Louis arches.

Cycle: Who are the up-and-coming Six Day riders in the U.S.?

Cranke: It's hard to say but I think from this past year the Ossa rider—Kevin Lavoie—has to be considered. He's young and has a lot to learn, but he's a good rider and has savvy and determination. Gary Younkins is very good. Max Markowitz is young and fast but he's got bad knees, or at least one bad knee. He's had it operated on and needs another operation. You can't bet on his future. Just like Don Stover—he was a good rider but he had parts of his body that just weren't working.

Cycle: How do you train for the Six Day? How true are the rumors of 5-mile runs and 100 push-up a day?

Cranke: I exercise sometimes if the mood suits me. Not very much. I just ride as much as I can and stay healthy. Back in Ohio before leaving for the Six Day everybody was sick. Jackie had a cold, and everyone was going to the doctor. Then the TV comes on and says there is this encephalitis epidemic spread by mosquitos and we have mosquito bites all over us. I could envision me in England with encephalitis or whatever it was. It killed some people. That just totally blew me away. I try to stay away from things like that.

Cycle: Is riding the best training?

Cranke: Sure. Would you tell a swimmer to ride a motorcycle before a swim? It makes good sense that the best training for riding a motorcycle is to ride one.

Cycle: Who trains the most on the U.S. Trophy Team?

Cranke: Probably me, and I don't train at all. Everyone pretty much rides. The guys back East ride more than we do. Every single weekend. Jackie and Tom ride an enduro or trial 50 weeks a year. I love motorcycles but I want to enjoy them. I don't want to ride every weekend. If you center your entire life around motorcycles you won't be able to do it for very long. That's the way I look at it.

Cycle: Does John Penton, or Trophy Team Manager Larry Maiers, have any ideas on

(Continued on page 102)

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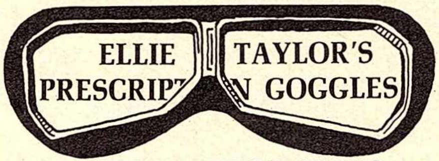

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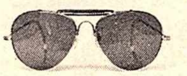

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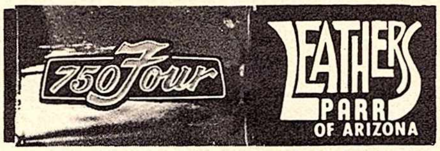

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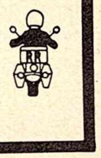

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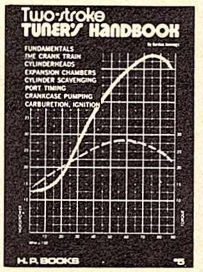

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102. The motorcycle touring equipment catalogue from **Eclipse** Inc., contains everything from tank bags to tents to cold weather riding gloves.
103. The Slipstreamer Fairing is the first all transparent fairing. Colorful leaflet gives full specs., from **C. F. Inc.**
104. The **Robert Bosch Corporation** lists its line of motorcycle spark plugs; bikes are matched to plugs, in an easy-to-read brochure.
105. **Gunk** Labs' colorful sheets include point and chain cleaners, chain lubes, and degreasers.
106. Nylon clutch-brake and gear shift levers from **Impac** Industries are detailed in their latest fact sheets.
107. 8 colorful pages illustrate **KRW**'s complete line of helmets in a catalogue featuring a "color matching" chart.
108. A new combination lock-cable-alarm is the subject of an easy-to-refer-to brochure from **Dualock.**
109. **Time Out Corporation** gives details on their cycle trailer in a color brochure.
110. **Norris Cycle Cams** has individual sheets listing their line of cams and associated valve train components, including two cycle—125/250 Elsinore parts.
111. A disc brake selector guide is available from **Performance Machine,** with pics and mounting instructions.
112. **Drag Bike** Engineering's chrome pipes and die cast chrome covers are pictured and described in this manufacturer's brochure.
113. **Shoei** Safety Helmet Corp. offers its brochures on helmets and saddlebags.
114. The Troubleshooter brochure from **WD-40** Company explains many do-it-yourself advantages of its combination rust preventive, silicone-free, lubricant spray.
115. **Cosmopolitan** Motors, Inc. provides information on the Benelli bikes, as well as the Cosmo Accessories: A complete list of dealers is also included.
116. Motorcycle tires, street, trials, and MX, are pictured and described in this easy-to-read pamphlet from the **inoue Group.**
117. Mail order catalogue of electrical wiring devices, from **AMP** Special Industries. 24 pages, with complete descriptions and ordering info. on insulated and uninsulated splices, terminals, connectors; hand tools for stripping wire and crimping terminals, as well as wire ties and markers and other electrical accessories.
118. Heatsulators, a brochure outlining insulated and heated clothing and equipment, is offered by **Visa-Therm.**
119. **Rebcor** will send full color leaflets on their complete line of helmets, as well as their handlebar-mounted fairing and Letan® windshields.
120. From **Bassani:** A complete listing of their exhaust system products.

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| 79 | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 |
| 92 | 93 | 94 | 95 | 96 | 97 | 98 | 99 | 100 | 101 | 102 | 103 | 104 |
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| 118 | 119 | 120 | | | | | | | | | | |

## CARL CRANKE

Continued from page 97

training?
Cranke: Yes. They don't like us staying up late. If Maiers catches someone running around real late he jumps on them. We have to respect him for it. John is a physical fitness fanatic. He runs every morning.
Cycle: How much sleep do you get each night at Six Day?
Cranke: Seven hours.
Cycle: What do you eat?
Cranke: Well, we had good food this year. In Italy I about starved to death. We had meat every night on the Island. A lot of lamb. They fix lamb every way it can be fixed. It was good. During the day I eat a good breakfast and then just grab chocolate or Gatorade on the trail. Some people don't eat breakfast.

Early in the afternoon of our trail ride we stopped at a secluded gas station/cafe for lunch. In discussing food, Carl revealed he doesn't eat fruit, rarely touches vegetables and hasn't had a drop of milk since he was six. He eats lots of meat and loves candy. So do I. Between us, we ate 10 candy bars on our IHDT trail ride.

Cycle: A friend of yours, Bren Moran, was killed on the first day of the Trial. What happened?
Cranke: The Trial started badly for us. I got the news that Bren had died and it just freaked me out. I didn't know what to do. I sat on the trail when they told me. I had a few minutes to spare at the check and I just sat there. I couldn't imagine not being able to see him again. I thought of him, and of talking to him, and memories came back. It just snapped me out. And the next day we had to ride right by where he got killed. It was on an old railroad right-of-way that was maybe 15 feet high and pretty rocky at the bottom. From what I understand he knocked himself unconscious and swallowed his partial plate. So he choked. His wife was there and it was really sad.
Cycle: Can Six Day riders actually change a tire in the legendary 4 minutes?
Cranke: Sure.
Cycle: When does the time start and end?
Cranke: It begins when you stop the bike and ends when it fires up again.
Cycle: What is the record?
Cranke: In Lorain this year Gary Younkins had set a really fast time and everyone was bragging about it, so I changed one to see if I could beat him. It was in the shop where things were clean but that was the only difference from actual Six Day conditions. I did a front one in 2 minutes 30 seconds and the rear in 3 minutes and 5 seconds.
Cycle: Both tires in 5:35!!!?
Cranke: Yes. Maiers was there and he kept track of the time.
Cycle: Tell us about the incident with Malcolm Smith where you ran interference.
Cranke: Oh yes. That was funny. There was a section that made two short laps through the city and Malcolm got stopped by a traffic cop who was making his lane wait while a bunch of other cars went by. After a full minute Malcolm got anxious and asked if he could go. The policeman said something like, "You'll go when I tell you and not before." With that Malcolm just let out the clutch. The guy grabbed at Malcolm and nearly yanked him off his bike, but he spun around and hauled down the street. Malcolm was worried that the guy would give him a ticket on the next lap and if that happens you're disqualified. So we devised a plan. Malcolm hung in right behind me so the policeman didn't have a clear view and as I approached the cop, I frantically pointed to the right in a questioning manner so he thought I was asking which way the course went. He was shaking his head no, no, no and got so involved pointing to the left that we both sailed past him. I think he caught what was happening at the last second, but by then it was too late. We were doing 50 mph.
Cycle: If you could pick an All-Star Trophy Team from anyone in the world, who would be on it?
Cranke: Wow. Probably four of the Czech riders and two of the West Germans—Whitthoft and Wolfgruber. On the Czech team just pick the ones who have won Gold Medals for the last 8–10 years and won their class five or six times. I can't say the Czech team has the six best riders in the world because they don't, but they have most of them. The Germans have good ones too.
Cycle: How about an American All-Star Team with brands being no consideration?
Cranke: I'd love to answer that but it's too political. The selection would be pretty obvious. I agree with the way the Team is selected now. John pays so he plays. How can you tell the person who pays the bills who will ride for him?
Cycle: How much does it cost to sponsor a Trophy Team?
Cranke: I don't know but it's a lot.
Cycle: $30–40 thousand?
Cranke: Anyway. I know when Six Days was in the U.S. we had to take care of all the KTM people and the cost was like $150,000, an incredible amount. We had to supply all the spares and support. Six Day is a dream to John—he wants to win the World Trophy.
Cycle: When will America do that?
Cranke: I'm not even sure it is possible. I will contribute whatever I can.
Cycle: What is your most satisfying achievement in motorcycling?
Cranke: I don't think I can really pin it down. I have had 11 years of satisfaction . . . starting with the first event I ever won. For a career to be a career it has to blossom with new achievements and goals. I don't think I could pick one thing. When I won a Gold Medal in my first Six Day in 1972 in Czechoslovakia, I was amazed because it had been a dream just to ride in a Trial. That really was pleasing. But then again it was pleasing to win the opening TT at Ascot in 1968. Everything is all in its own perspective.
Cycle: If careers have to blossom how can you see yours opening up anymore? What's left?
Cranke: Getting more proficient. I become satisfied when I please myself with my riding. I need to settle down a bit and work towards more control.

Maybe that's why Carl isn't sure whether it's possible for America to win the ISDT. He knows he's as good as any U.S. rider, yet he is trying to improve—to reach the levels of riding ability he has seen in the people whose names he can't pronounce—Mrazek, Cespiva, Stodulka, Gustavsson, Cihelka. ◉

## EDITORIAL

. . . Continued from page 4

The plain truth of the matter is, Kawasaki and Suzuki, for all their talk of improving the breed and sales promotion and toughening up the old image, turn out to have been involved in racing for the same reason as everybody else: Suzuki and Kawasaki raced because it was fun. It would be easy to haul off and blame their disappearance on a rules structure that permitted Yamaha to sweep all before them year after year, but that overlooks the fact that Kawasaki had Yamaha covered at Laguna Seca, and Suzuki matched the TZs for speed at Ontario and Daytona. Suzuki and Kawasaki have withdrawn because there aren't really enough road race Nationals to make it worth their while: that's an idea that has merit, except that there were but three Nationals in 1975, and there will be four in 1976, so why didn't Suzuki and Kawasaki pull out at the beginning of the '75 season, instead of the end?

No, the only reason that makes sense is the reason that's the most appealing: racing is an extravagance and an indulgence and great good fun, and it can be savored if God is in his heaven and all is right with the world. Suzuki and Kawasaki did not race by reflex, the way H-D and MV do, and Yamaha generally does. Suzuki and Kawasaki thought it would be a fun thing, so they did it, and kept on doing it until the American market was temporarily unable to support their habit.

That is where things stand now: sales in the U.S. are soft, the economy is tight, and to burn off boxcar-loads of money in the pursuit of racing success might be thought of as whimsical at best, times being what they are. Want to see Suzuki and Kawasaki back in the United States, whistling around Daytona's high banks and darting through Laguna's corkscrew greenery (sometimes on the track, sometimes—literally—*through* the greenery)? Fine. You can do it. Only you can do it. You're simply going to have to start buying more motorcycles. The more bikes you buy, the stronger the market will become. The stronger the market, the easier Suzuki and Kawasaki executives will breathe. And the easier they breathe, the more fondly they will look upon pavement racing as a way to "project the company's image" and "do important R&D on ideas and hardware that will be incorporated on forthcoming street models" and "promote the name of the company." You and I will know better, naturally. You and I will know that behind all the mega-syllable bush-beating and the biz-chatter will be one executive, or one group of executives, who have decided once again that the time has come to go out there and have some *fun*.

*—Cook Neilson*

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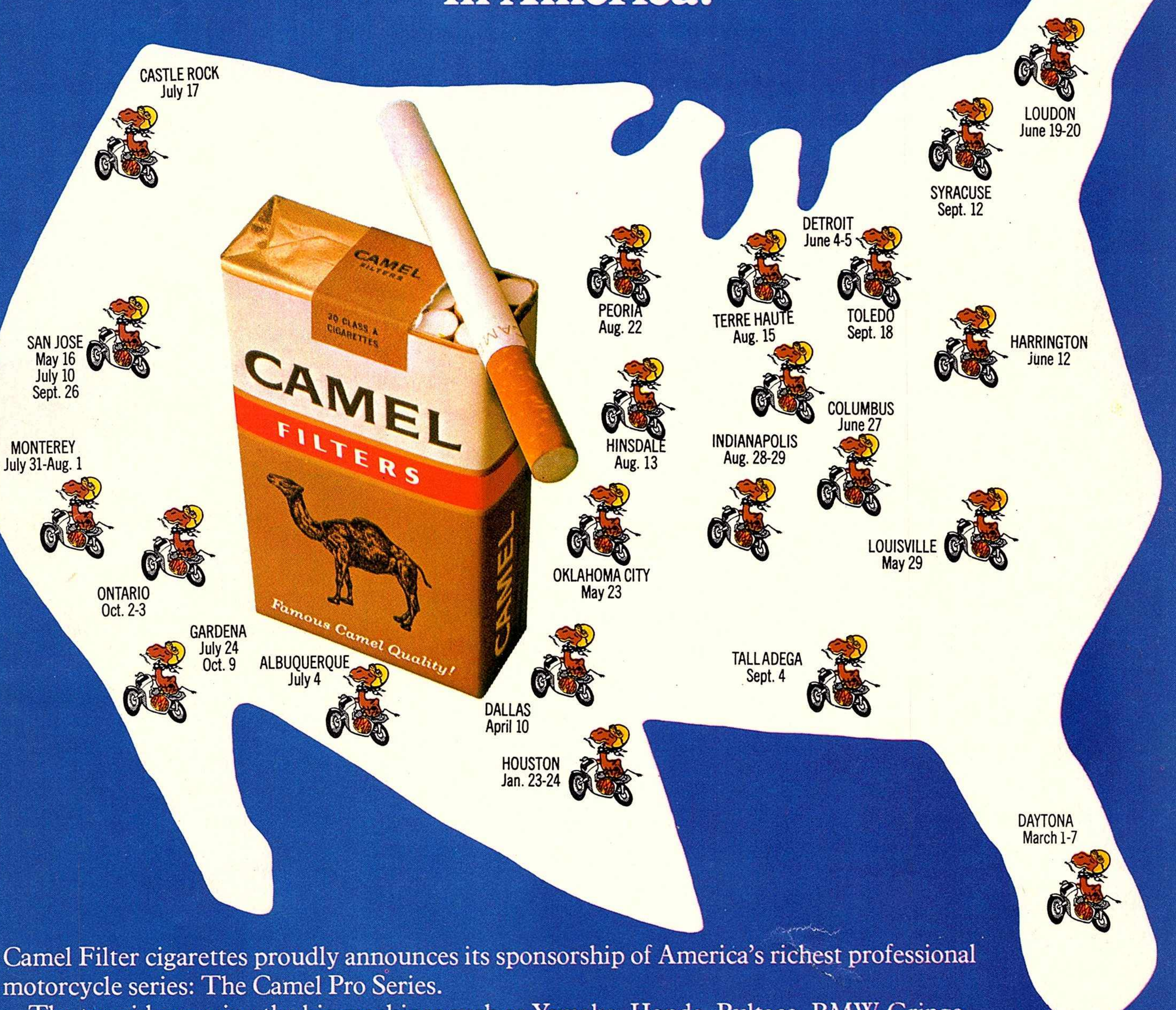

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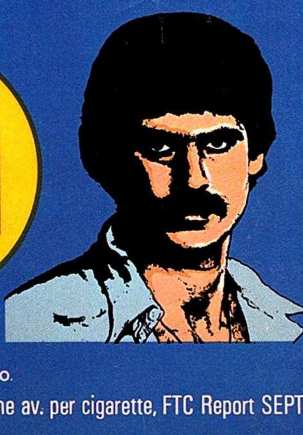

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